(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 January 2002 (03.01.2002)

PCT

(10) International Publication Number
WO 02/00677 A1

(51) International Patent Classification[7]: C07H 21/02, 21/04, C12N 1/20, 15/00, 15/09, 15/63, 15/70, 15/74

(21) International Application Number: PCT/US01/18569

(22) International Filing Date: 7 June 2001 (07.06.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/209,467 7 June 2000 (07.06.2000) US

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/00677 A1

(54) Title: NUCLEIC ACIDS, PROTEINS, AND ANTIBODIES

(57) Abstract: The present invention relates to novel ovarian related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "ovarian antigens", and the use of such ovarian antigens for detecting disorders of the ovaries and/or breast, particularly the presence of ovarian and/or breast cancer and ovarian and/or breast cancer metastases. More specifically, isolated ovarian associated nucleic acid molecules are provided encoding novel ovarian associated polypeptides. Novel ovarian polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human ovarian associated polynucleotides and/or polypeptides. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the ovaries and/or breast, including ovarian and/or breast cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and function of the polypeptides of the present invention.

Nucleic Acids, Proteins, and Antibodies

[0001] This application refers to a "Sequence Listing" that is provided on electronic media in computer readable form pursuant to Administrative Instructions Section 801(a)(i). The Sequence Listing forms a part of this description pursuant to Rule 5.2 and Administrative Instructions Sections 801 to 806, and is hereby incorporated in its entirety.

[0002] The Sequence Listing is provided as an electronic file (PA133PCTSL.txt, 7,347,875 bytes in size, created on 07 June 2001) on four identical compact discs (CD-R), labeled "COPY 1," "COPY 2," "COPY 3," and "CRF." The Sequence Listing complies with Annex C of the Administrative Instructions, and may be viewed, for example, on an IBM-PC machine running the MS-Windows operating system by using the V viewer software, version 2000 (see World Wide Web URL: http://www.fileviewer.com).

Field of the Invention

[0003] The present invention relates to novel ovarian related polynucleotides, the polypeptides encoded by these polynucleotides herein collectively referred to as "ovarian antigens," and antibodies that immunospecifically bind these polypeptides, and the use of such ovarian polynucleotides, antigens, and antibodies for detecting, treating, preventing and/or prognosing disorders of the reproductive system, particularly disorders of the ovaries and/or breast, including, but not limited to, the presence of ovarian and/or breast cancer and ovarian and/or breast cancer metastases. More specifically, isolated ovarian nucleic acid molecules are provided encoding novel ovarian polypeptides. Novel ovarian

nucleic acid molecules are provided encoding novel ovarian polypeptides. Novel ovarian polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human ovarian polynucleotides, polypeptides, and/or antibodies. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the ovaries and/or breast, including ovarian and/or breast cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The invention further relates to methods and/or compositions for inhibiting or promoting the production and/or function of the polypeptides of the invention.

Background of the Invention

[0004] The female reproductive system is comprised of both external and internal organs. The external organs function in permitting sperm to enter the body and protecting the internal genital organs from infection and injury. The internal organs form a pathway (the genital tract) for reproduction, beginning at the ovaries, through the fallopian tubes (oviducts) and uterus, to the birth canal (vagina).

[0005] The sexual and reproductive functions in the female can be divided into two major phases: first, preparation of the body for conception, and second, the gestation and parturition. Gestation and parturition only occur if an ovum becomes fertilized. If fertilization does not occur, the reproductive system undergoes a cycle to ensure frequent readiness for conception and fertilization.

[0006] The complexity of the female reproductive system renders it susceptible to several diseases and disorders. In particular, the ovaries and breast are subject to diseases and/or disorders such as infections, hyperproliferative disorders, as well as regulatory and genetic abnormalities.

Disorders of the Ovary

[0007] A woman's ovaries are located on both sides of the uterus, below the opening of the fallopian tubes (tubes that extend from the uterus to the ovaries). In

addition to producing egg cells for reproduction, the ovaries produce estrogen and progesterone, which affect many of the female characteristics and reproductive functions.

[0008] Anovulation (the absence of egg release by the ovaries) is a serious condition leading to infertility. The exact etiology of anovulation, especially in women with otherwise normal menstrual cycles, is unclear, however several potential causes are under study, including: impaired follicular development (probably due to low or absent estrogen production or binding), normal follicular development with lack of egg release (probably due to progesterone deficiency), or insufficient production of gonadotropin-releasing hormone from the hypothalamus. Current treatments include clomiphene injections or hormonal therapy, although both can lead to serious side effects such as ovarian cancer and ovarian hyperstimulation syndrome.

[0009] Anovulation is also associated with polycyctic ovary syndrome (also known as Stein-Leventhal syndrome). This syndrome is and endocrine disorder characterized by an elevated level of male hormones (androgens). Other than anovulation, symptoms include growth of male-patterned body hair (hirsutism), excessive acne, irregular or absent menses, excessive bleeding, and obesity. Usually, the ovaries appear enlarged and may contain many follicular cysts.

[0010] Ovarian cancer develops most often in women between the ages of 50 and 70. It is the third most common cancer of the female reproductive system, but more women die of ovarian cancers than of any other. Ovaries include a variety of cell types, each of which may give rise to a distinct type of cancer, including, but not limited to, ovarian epithelial cancer, ovarian germ cell tumors, ovarian papillary serous adenocarcinoma, ovarian mucinous adenocarcinoma, ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and ovarian low malignant tumors.

[0011] Other disorders of the ovaries also include, but are not limited to, inflammatory disorders, such as oophoritis (e.g., caused by viral or bacterial infection), ovarian cysts, and autoimmune disorders (e.g., premature ovarian failure and autoimmune oophoritis).

Disorders of the Breast

[0012] The breast is comprised of different structures, each with its own specific function. One-third of the breast is comprised of fatty tissue. The other two-thirds is made

up of structural components called ducts and lobules. Milk is produced in the lobules and funneled through the ducts to the nipple. Disorders of the breast typically involve the formation of lesions within breast tissue. While many of these lesions are benign in nature, they may lead to cancer if left untreated.

[0013] Benign breast lesions include, for example, cysts, which are non-cancerous, fluid-filled sacs that forma mass within breast tissue. The cause of breast cysts is unknown, though injury may be involved, and their main symptom is pain. While considered harmless, a professional should drain cysts and the fluid examined because cancer of the cyst wall, although quite rare, is possible.

[0014] Other benign breast lesions include fibrous breast lumps (fibroadenomas), breast infection (mastitis), intraductal papilloma, and abscesses. Fibrous breast lumps are small, solid lumps of glandular tissue. These lumps usually appear in young women, often in teenagers, and are easy to remove. Intraductal papilloma are small lumps located within a milk duct, often causing inappropriate discharge from the nipple. Breast abscesses are collections of pus in breast tissue that develop from breast infections that go untreated.

[0015] Breast cancer is the most common cancer among women, other than skin cancer and is the second leading cause of cancer death in women, after lung cancer. The American Cancer Society predicts that there will be about 182,800 new cases of invasive breast cancer in the year 2000 among women in this country and about 40,800 deaths from the disease. Breast cancer also occurs among men, although much less often. It is generally believed that this malignancy arises from a multi step process involving mutations in a relatively small number of genes, perhaps 10 or less. These mutations result in significant changes in the growth and differentiation of breast tissue that allow it to grow independent of normal cellular controls, to metastasize, and to escape immune surveillance. The genetic heterogeneity of most breast cancers suggests that they arise by a variety of initiating events and that the characteristics of individual cancers are due to the collective pattern of genetic changes that accumulate.

[0016] The discovery of new human ovarian associated polynucleotides, the polypeptides encoded by them, and antibodies that immunospecifically bind these polypeptides, satisfies a need in the art by providing new compositions which are useful in

the diagnosis, treatment, prevention and/or prognosis of disorders of the ovaries and/or breast, including, but not limited to, neoplastic disorders (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below) and as described in "Reproductive System Disorders" below.

Summary of the Invention

[0017] The present invention relates to novel ovarian related polynucleotides, the polypeptides encoded by these polynucleotides herein collectively referred to as "ovarian antigens," and antibodies that immunospecifically bind these polypeptides, and the use of such ovarian polynucleotides, antigens, and antibodies for detecting, treating, preventing and/or prognosing disorders of the reproductive system, particularly disorders of the ovaries and/or breast, including, but not limited to, the presence of ovarian and/or breast cancer and ovarian and/or breast cancer metastases. More specifically, isolated ovarian nucleic acid molecules are provided encoding novel ovarian polypeptides. Novel ovarian polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human ovarian polynucleotides, polypeptides, and/or antibodies. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the ovaries and/or breast, including ovarian and/or breast cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The invention further relates to methods and/or compositions for inhibiting or promoting the production and/or function of the polypeptides of the invention.

Detailed Description

Tables

[0018] Table 1 summarizes some of the polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID NO:Z), contig sequences (contig identifier (Contig ID:) and contig nucleotide sequence identifier (SEQ ID NO:X)) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby. The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA plasmid related to each ovarian associated contig sequence disclosed in Table 1. The second column provides a unique contig identifier, "Contig ID:" for each of the contig sequences disclosed in Table 1. The third column provides the sequence identifier, "SEQ ID NO:X", for each of the contig polynucleotide sequences disclosed in Table 1. The fourth column, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:X that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1 as SEQ ID NO:Y (column 5). Column 6 lists residues comprising predicted epitopes contained in the polypeptides encoded by each of the preferred ORFs (SEQ ID NO:Y). Identification of potential immunogenic regions was performed according to the method of Jameson and Wolf (CABIOS, 4:181-186 (1988)); specifically, the Genetics Computer Group (GCG) implementation of this algorithm, embodied in the program PEPTIDESTRUCTURE (Wisconsin Package v10.0, Genetics Computer Group (GCG), Madison, Wisc.). This method returns a measure of the probability that a given residue is found on the surface of the protein. Regions where the antigenic index score is greater than 0.9 over at least 6 amino acids are indicated in Table 1 as "Predicted Epitopes." In particular embodiments, ovarian associated polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the predicted epitopes described in Table 1. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. Column 7, "Tissue Distribution" shows the expression profile of tissue, cells, and/or cell line libraries which express the polynucleotides of the invention. The first number in column 7 (preceding the colon), represents the tissue/cell source identifier

code corresponding to the code and description provided in Table 4. Expression of these polynucleotides was not observed in the other tissues and/or cell libraries tested. For those identifier codes in which the first two letters are not "AR", the second number in column 7 (following the colon), represents the number of times a sequence corresponding to the reference polynucleotide sequence (e.g., SEQ ID NO:X) was identified in the tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression. Column 8, "Cytologic Band," provides the chromosomal location of polynucleotides corresponding to SEQ ID NO:X. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Given a presumptive chromosomal location, disease locus association was determined by comparison with the Morbid Map, derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000. World

Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/). If the putative chromosomal location of the Query overlapped with the chromosomal location of a Morbid Map entry, an OMIM identification number is provided in column 9 labeled "OMIM Disease Reference(s)". A key to the OMIM reference identification numbers is provided in Table 5.

[0019] Table 2 summarizes homology and features of some of the polypeptides of the invention. The first column provides a unique clone identifier, "Clone ID NO:Z", corresponding to a cDNA disclosed in Table 1. The second column provides the unique contig identifier, "Contig ID:" corresponding to contigs in Table 1 and allowing for correlation with the information in Table 1. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequences. The fourth column provides the analysis method by which the homology/identity disclosed in the row was determined. Comparisons were made between polypeptides encoded by the polynucleotides of the invention and either a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFAM") as further described below. The fifth column provides a description of PFAM/NR hits having significant matches to a polypeptide of the invention. Column six provides the accession number of the PFAM/NR hit disclosed in the fifth column. Column seven, "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in column five. Columns 8 and 9, "NT From" and "NT To" respectively, delineate the polynucleotides in "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFAM/NR database as disclosed in the fifth column. In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, an amino acid sequence encoded by the polynucleotides in SEQ ID NO:X as delineated in columns 8 and 9, or fragments or variants thereof.

[0020] Table 3 provides polynucleotide sequences that may be disclaimed according to certain embodiments of the invention. The first column provides a unique clone identifier, "Clone ID NO:Z", for a cDNA clone related to ovarian associated contig sequences disclosed in Table 1. The second column provides the sequence identifier, "SEQ ID NO:X", for contig polynucleotide sequences disclosed in Table 1. The third column provides the unique contig identifier, "Contig ID", for contigs disclosed in Table 1. The fourth column provides a unique integer 'a' where 'a' is any integer between 1 and

the final nucleotide minus 15 of SEQ ID NO:X, represented as "Range of a", and the fifth column provides a unique integer 'b' where 'b' is any integer between 15 and the final nucleotide of SEQ ID NO:X, represented as "Range of b", where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. For each of the polynucleotides shown as SEQ ID NO:X, the uniquely defined integers can be substituted into the general formula of a-b, and used to describe polynucleotides which may be preferably excluded from the invention. In certain embodiments, preferably excluded from the polynucleotides of the invention (including polynucleotide fragments and variants as described herein and diagnostic and/or therapeutic uses based on these polynucleotides) are at least one, two, three, four, five, ten, or more of the polynucleotide sequence(s) having the accession number(s) disclosed in the sixth column of this Table. In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or more of the available material having the accession numbers identified in the sixth column of this Table.

[0021] Table 4 provides a key to the tissue/cell source identifier code disclosed in Table 1, column 7. Column 1 provides the key to the tissue/cell source identifier code disclosed in Table 1, Column 7. Columns 2-5 provide a description of the tissue or cell source. Codes corresponding to diseased tissues are indicated in column 6 with the word "disease". The use of the word "disease" in column 6 is non-limiting. The tissue or cell source may be specific (e.g. a neoplasm), or may be disease-associated (e.g., a tissue sample from a normal portion of a diseased organ). Furthermore, tissues and/or cells lacking the "disease" designation may still be derived from sources directly or indirectly involved in a disease state or disorder, and therefore may have a further utility in that disease state or disorder. In numerous cases where the tissue/cell source is a library, column 7 identifies the vector used to generate the library.

[0022] Table 5 provides a key to the OMIM™ reference identification numbers disclosed in Table 1, column 9. OMIM reference identification numbers (Column 1) were derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine, (Bethesda, MD) 2000. World Wide Web URL:

http://www.ncbi.nlm.nih.gov/omim/). Column 2 provides diseases associated with the cytologic band disclosed in Table 1, column 8, as determined from the Morbid Map database.

[0023] Table 6 summarizes ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application.

[0024] Table 7 shows the cDNA libraries sequenced, tissue source description, vector information and ATCC designation numbers relating to these cDNA libraries.

Definitions

[0025] The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

[0026] In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide sequences of the present invention.

[0027] As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence encoding SEQ ID NO:Y or a fragment or variant thereof; a nucleic acid sequence contained in SEQ ID NO:X (as described in column 3 of Table 1) or the complement thereof; or a cDNA sequence contained in Clone ID NO:Z (as described in column 1 of Table 1 and contained within a library deposited with the ATCC). For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-

Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

[0028] As used herein, an "ovarian antigen" refers collectively to any polynucleotide disclosed herein (e.g., a nucleic acid sequence contained in SEQ ID NO:X or the complement therof, or cDNA sequence contained in Clone ID NO:Z, (e.g., a nucleic acid sequence contained in SEQ ID NO:X or the complement thereof, or cDNA sequence contained in Clone ID NO:Z, and fragments or variants thereof as described herein) or any polypeptide disclosed herein (e.g., an amino acid sequence contained in SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, or the complement thereof, an amino acid sequence encoded by the cDNA sequence contained in Clone ID NO:Z, and fragments or variants thereof as described herein). These ovarian antigens have been determined to be predominantly expressed in ovarian tissues, including normal or diseased tissues (as shown in Table 1 column 7 and Table 4).

[0029] In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown, for example, in column 1 of Table 1, each clone is identified by a cDNA Clone ID (identifier generally referred to herein as Clone ID NO:Z). Each Clone ID is unique to an individual clone and the Clone ID is all the information needed to retrieve a given clone from the HGS library. Furthermore, certain clones disclosed in this application have been deposited with the ATCC on June 5, 2000 and were given ATCC Deposit Nos. PTA-1982 and PTA-1985. In addition to the individual cDNA clone deposits, most of the cDNA libraries from which the clones were derived were deposited at the American Type Culture Collection (hereinafter "ATCC"). Table 7 provides a list of the deposited cDNA libraries. One can use the Clone ID NO:Z to determine the library source by reference to Tables 6 and 7. Table 7 lists the deposited cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone (Clone ID NO:Z) isolated from that library begins with the same four characters, for example "HTWEP07". As mentioned below, Table 1 correlates the Clone ID NO:Z names with SEQ ID NO:X. Thus, starting with an SEQ ID NO:X, one can use Tables 1A, 6 and 7 to determine the corresponding Clone ID NO:Z, which library it came

from and which ATCC deposit the library is contained in. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure.

[0030] In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5 kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

[0031] A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), the polynucleotide sequence delineated in columns 8 and 9 of Table 2 or the complement thereof, and/or cDNA sequences contained in Clone ID NO:Z (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments, ans/or the cDNA clone within the pool of cDNA clones deposited with the ATCC, described herein). "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 μg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

[0032] Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions.

Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency), salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH_2PO_4; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 ug/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

[0033] Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

[0034] Of course, a polynucleotide which hybridizes only to polyA+ sequences (such as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).

[0035] The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons.

"Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

[0036] The polypeptide of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphotidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992).)

[0037] "SEQ ID NO:X" refers to a polynucleotide sequence described, for example, in Tables 1A or 2, while "SEQ ID NO:Y" refers to a polypeptide sequence described in column 5 of Table 1. SEQ ID NO:X is identified by an integer specified in column 3 of Table 1. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. "Clone ID NO:Z" refers to a cDNA clone described in column 1 of Table 1.

[0038] "A polypeptide having biological activity" refers to a polypeptide exhibiting activity similar to, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention).

[0039] Table 1 summarizes some of the polynucleotides encompassed by the invention (including contig sequences (SEQ ID NO:X) and clones (Clone ID NO:Z) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby.

Polynucleotides and Polypeptides

TABLE 1

Clone ID NO: Z	Contig ID:	SEQ ID NO: X	ORF (From-To)	AA SEQ ID NO: Y	Predicted Epitopes	Tissue Distribution Library code: count (see Table IV for Library Codes)	Cytologic Band	OMIM Disease Reference(s):
HOVCD34	396327	11	158 - 328	2186		H0428: 2		
HEBGD58	498281	12	3 - 107	2187	His-1 to Gly-19, Gly-29 to Tyr-35.	L0744: 5, L0758: 5, L0766: 4, L0803: 4, L0439: 4, L0759: 4, H0657: 3, H0341: 3, L0794: 3, H0648: 3, L0747: 3, L0752: 3, S0422: 2, L0598: 2, L0770: 2, L0809: 2, H0696: 2, L0742: 2, L0755: 2, H0716: 1, S0116: 1, H0638: 1, S0444: 1, S0360: 1, H0637: 1, H0580: 1, S0007: 1, L0586: 1, H0156: 1, H0599: 1, L0022: 1, H0042: 1, H0318: 1, H0327: 1, H0328: 1, H0615: 1, L0483: 1, S0112: 1, T0042: 1, H0560: 1, H0625: 1, L0769: 1, L0800: 1, L0764: 1, L0804: 1, L0375: 1,		

HETCD42	533532	13	18 - 947	2188	Glu-29 to Lys-37, Lys-110 to Ile-118, Arg-126 to Cys-135, Lys-157 to Gly-163, Gln-188 to Trp-201, Glu-269 to Thr-278.	H0013: 8, L0731: 8, L0471: 6, S0003: 6, H0547: 6, L0439: 6, L0740: 6, H0046: 5, H0144: 5, H0171: 4, H0494: 4, L0766: 4, L0775: 4, L0666: 4, H0521: 4, L0754: 4, L0588: 4, L0600: 4, H0624: 3, H0657: 3, H0575: 3, H0591: 3, H0551: 3, H0529: 3, S0126: 3, H0696: 3, L0745: 3, S0040: 2, H0295: 2, S0116: 2, H0638: 2, S0356: 2, S0376: 2, S0278: 2,	L0805: 1, L0776: 1, L0791: 1, L0792: 1, L4501: 1, L0666: 1, L0663: 1, H0144: 1, L0352: 1, H0547: 1, H0519: 1, H0659: 1, H0660: 1, S0152: 1, H0521: 1, H0522: 1, S0028: 1, L0749: 1, L0756: 1, L0753: 1, L0757: 1, H0445: 1, L0588: 1, L0592: 1 and S0192: 1.	7q31.2-q31.3	150240, 164160, 180105, 190900, 222800, 246900, 602421, 602421, 602421

H0156: 2, H0036: 2, H0266: 2, H0179: 2, H0328: 2, H0615: 2, H0039: 2, H0622: 2, H0031: 2, H0090: 2, H0412: 2, H0623: 2, H0560: 2, H0625: 2, S0422: 2, L0770: 2, L0662: 2, L0768: 2, L0649: 2, L0803: 2, H0684: 2, S0152: 2, S0028: 2, S0206: 2, L0752: 2, L0757: 2, L0759: 2, S0031: 2, S0434: 2, L0362: 2, S0026: 2, S0196: 2, H0170: 1, H0556: 1, S0342: 1, S0134: 1, S0212: 1, H0661: 1, S0418: 1, S0420: 1, S0354: 1, S0358: 1, S0444: 1, H0580: 1, S0045: 1, S0132: 1, H0393: 1, L0717: 1, S0222: 1, H0614: 1, H0357: 1, H0587: 1, H0632: 1, H0270: 1, T0114: 1, H0250: 1, S0280: 1, S0474: 1, H0581: 1, H0374: 1,								

		H0052: 1, H0232: 1, H0050: 1, H0024: 1, H0014: 1, H0373: 1, H0051: 1, S0051: 1, H0355: 1, H0375: 1, H0594: 1, S0214: 1, L0483: 1, H0553: 1, H0644: 1, H0032: 1, H0212: 1, S0036: 1, H0038: 1, H0264: 1, H0413: 1, H0056: 1, T0042: 1, S0466: 1, H0509: 1, H0207: 1, H0641: 1, H0647: 1, S0344: 1, L0638: 1, L0637: 1, L0794: 1, L0804: 1, L0805: 1, L0656: 1, L0635: 1, L0528: 1, L0664: 1, L0665: 1, H0520: 1, H0519: 1, H0593: 1, H0435: 1, H0659: 1, H0670: 1, H0672: 1, H0651: 1, S0328: 1, S0330: 1, L0602: 1, H0518: 1, S0176: 1, H0555: 1, S0390: 1, L0750: 1, S0260: 1, H0595: 1, L0599: 1, L0608: 1, H0668: 1,			

HTXKC18	535854	14	387 - 115	2189	Ser-57 to Gly-65, Gly-80 to His-86.	AR039: 65, AR096: 37, AR104: 37, AR089: 32, AR053: 27, AR052: 25, AR033: 22, AR060: 21, AR055: 21, AR061: 11 H0556: 1	6p21.3		
HLDRK20	553765	15	48 - 1214	2190	Thr-8 to Thr-19, Arg-108 to Ser-115, Ser-117 to Arg-128, Phe-143 to Tyr-155, Leu-171 to Arg-177, Asn-182 to Gly-187, Gly-195 to Ser-200, Arg-232 to Thr-248, Pro-287 to Arg-293.	H0653: 1, S0192: 1, H0543: 1 and : 1. L0665: 45, L0581: 42, H0509: 32, H0393: 15, H0574: 15, H0510: 15, L0362: 14, L0666: 11, H0658: 10, L0748: 10, H0014: 9, S0410: 8, H0331: 8, H0674: 8, S0438: 8, L0657: 8, H0689: 8, H0039: 7, L0659: 7, H0670: 7, S0044: 7, H0663: 6, H0622: 5, H0641: 5, S0360: 4, H0046: 4, H0246: 4, H0355: 4, H0169: 4, H0648: 4, L0749: 4, S0318: 3, L0662: 3, L0768: 3, L0775: 3, L0664: 3, H0682: 3, L0751: 3, H0506: 3, S0132: 2, H0441: 2, H0632: 2,			106300, 108800, 120290, 120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550,

H2MBD33	558474	16	138 - 290	2191	Ser-13 to Asp-18.	S0434: 2, L0601: 2, H0624: 1, L0615: 1, H0662: 1, S0356: 1, L0717: 1, H0549: 1, H0431: 1, H0586: 1, H0643: 1, H0575: 1, H0569: 1, H0057: 1, H0015: 1, H0687: 1, S0003: 1, S0214: 1, H0688: 1, H0553: 1, H0124: 1, H0059: 1, L0564: 1, L0065: 1, S0440: 1, L0638: 1, L0646: 1, L0764: 1, L0771: 1, L0386: 1, L0375: 1, L0525: 1, L0378: 1, L0776: 1, L0634: 1, L0544: 1, H0144: 1, S0374: 1, H0693: 1, S0310: 1, H0593: 1, S0126: 1, H0690: 1, H0684: 1, H0435: 1, H0660: 1, H0666: 1, S0328: 1, H0521: 1, S0406: 1, H0555: 1, S0027: 1, L0750: 1, L0755: 1, S0031: 1, S0192: 1, S0276: 1 and S0196: 1.	L0666: 2, L0394: 1,	600202, 600261, 601868, 602280, 602475	

						T0109: 1, H0428: 1, H0264: 1, L0764: 1, L0665: 1 and H0648: 1.			
HSYBX61	558708	17	3 - 515	2192	Arg-13 to Ala-20, Pro-27 to Arg-32, Lys-37 to Glu-62.	H0428: 2, L0757: 2, H0170: 1, S0007: 1, H0028: 1, S0250: 1, H0252: 1, H0328: 1, H0124: 1, H0551: 1, L0439: 1 and L0750: 1.	18q12.1	176300, 176300, 176300, 176300	
HELHC03	562745	18	623 - 1018	2193	Pro-105 to Trp-117.	AR089: 5, AR096: 4, AR060: 3, AR104: 3, AR061: 2, AR055: 2, AR033: 1, AR053: 1, AR039: 0 H0615: 2, H0346: 1, S0045: 1, H0156: 1, H0659: 1, L0748: 1 and H0444: 1.			
HOFMP70	585385	19	99 - 347	2194		H0415: 3	12q24.2-q24.3	100650, 100650, 142410, 142410, 142410, 160781, 181405	
HSKNZ25	585675	20	357 - 641	2195	Gly-1 to Ala-9, Pro-42 to Ser-56, Leu-60 to Gly-67, Ala-86 to Asp-95.	S3012: 1			
HDPFK39	588869	21	1 - 720	2196	Pro-14 to Ser-19,	H0521: 4, H0415: 1	16p11.2	147781,	

				Glu-55 to Phe-60, Asp-93 to Ser-98, Thr-138 to Tyr-144, Asn-155 to Phe-163, Arg-168 to Ser-175, Gln-205 to Lys-210, Phe-226 to Thr-233.	and H0522: 1.			172471, 182381
HL1AB07	638220	22	2 - 514	2197	Asn-18 to Arg-24, Arg-30 to Tyr-35, Glu-43 to Asp-51, Glu-56 to Gly-66, Leu-101 to Lys-107, Ala-156 to His-171.	L0747: 15, L0742: 12, L0748: 12, L0752: 12, L0757: 9, L0731: 8, L0754: 7, S0144: 6, L0755: 6, S0356: 5, S0406: 5, L0740: 5, H0046: 4, L0764: 4, H0543: 4, H0250: 3, H0040: 3, L0761: 3, L0646: 3, L0774: 3, L0806: 3, L0751: 3, L0745: 3, L0753: 3, L0759: 3, S0212: 2, H0661: 2, S0360: 2, S0280: 2, H0014: 2, H0039: 2, S0036: 2, H0163: 2, L0768: 2, L0775: 2, L0776: 2, L0379: 2, L0783: 2, L0809: 2, H0702: 2, S0126: 2, H0689: 2, H0658: 2, H0672: 2, L0439: 2, L0750: 2,	7q36	142335, 152427, 163729, 176450, 190605, 600510, 600725

		L0756: 2, L0758: 2, L0605: 2, L0590: 2, S0011: 2, H0171: 1, H0556: 1, T0002: 1, S0040: 1, S0134: 1, S0218: 1, H0657: 1, H0341: 1, H0484: 1, H0306: 1, H0305: 1, H0125: 1, S0442: 1, S0358: 1, S0132: 1, H0351: 1, H0586: 1, H0574: 1, H0486: 1, H0013: 1, H0635: 1, H0575: 1, H0318: 1, H0052: 1, H0597: 1, H0041: 1, H0050: 1, L0163: 1, S0388: 1, S0051: 1, H0356: 1, H0266: 1, H0687: 1, S0312: 1, S0003: 1, H0252: 1, T0006: 1, L0142: 1, H0313: 1, L0055: 1, H0032: 1, H0169: 1, H0038: 1, T0041: 1, S0306: 1, S0438: 1, H0130: 1, H0641: 1, H0647: 1, S0344: 1, S0210: 1, L0763: 1, L0770: 1, L0769: 1, L0372: 1,				

					L0642: 1, L0645: 1, L0771: 1, L0648: 1, L0662: 1, L0364: 1, L0375: 1, L0655: 1, L0807: 1, L0657: 1, L0659: 1, L0532: 1, L0666: 1, L0664: 1, L0665: 1, H0144: 1, H0701: 1, H0711: 1, S0380: 1, H0521: 1, S0404: 1, S0206: 1, L0749: 1, L0777: 1, H0445: 1, L0599: 1, S0276: 1, H0423: 1 and H0506: 1.	17
					L0744: 11, S0007: 10, H0617: 10, L0747: 9, H0673: 8, H0597: 6, L0809: 6, H0683: 6, L0748: 6, L0754: 6, L0731: 6, L0622: 5, L0542: 5, L0755: 5, H0306: 4, H0402: 4, H0150: 4, H0188: 4, L0775: 4, L0751: 4, H0170: 3, H0255: 3, S0278: 3, T0006: 3, H0674: 3, L0774: 3, L0740: 3, L0745: 3, H0352: 3, H0657: 2,	
			2198			
			115 - 393			
			23			
			654868			
			HHGAS83			

		L0785: 2, H0661: 2, S0376: 2, S0360: 2, H0637: 2, H0333: 2, H0486: 2, H0309: 2, H0545: 2, H0123: 2, H0594: 2, H0032: 2, H0169: 2, S0142: 2, L0767: 2, L0776: 2, L0655: 2, L0529: 2, L0530: 2, L0666: 2, L0663: 2, L0664: 2, H0682: 2, L0750: 2, L0753: 2, L0757: 2, L0759: 2, L0588: 2, L0361: 2, S0114: 1, T0049: 1, S0134: 1, H0254: 1, S0358: 1, H0580: 1, H0339: 1, S0046: 1, S0140: 1, S6026: 1, S0300: 1, S6022: 1, H0441: 1, H0455: 1, H0643: 1, T0060: 1, L0021: 1, H0042: 1, H0618: 1, H0253: 1, N0011: 1, S0049: 1, H0327: 1, H0530: 1, H0546: 1, H0086: 1, H0009: 1, H0081: 1, H0050: 1, H0620: 1, H0024: 1,				

		H0057: 1, H0373: 1, S0051: 1, H0071: 1, H0687: 1, S0003: 1, S0214: 1, H0417: 1, H0031: 1, H0553: 1, H0111: 1, H0181: 1, H0606: 1, H0038: 1, H0616: 1, H0063: 1, H0087: 1, H0412: 1, H0059: 1, T0069: 1, T0004: 1, L0564: 1, S0440: 1, S0144: 1, S0344: 1, S0208: 1, L0598: 1, L0520: 1, L0763: 1, L0371: 1, L0770: 1, L0667: 1, L0764: 1, L0765: 1, L0771: 1, L0662: 1, L0375: 1, L0376: 1, L0378: 1, L0806: 1, L0658: 1, L0659: 1, L0518: 1, L0783: 1, L0788: 1, S0053: 1, H0691: 1, H0519: 1, S0126: 1, H0689: 1, H0660: 1, S0330: 1, H0696: 1, S0404: 1, H0576: 1, S3014: 1, S0206: 1, L0742: 1, L0743: 1, L0749: 1,			

						L0752: 1, H0445: 1, L0589: 1, L0592: 1, L0608: 1, H0422: 1, H0008: 1 and H0293: 1.			
HTSGU37	704405	24	3 - 515	2199	Ile-1 to Thr-10, Pro-66 to Gly-77, Asp-85 to Gly-116.	AR089: 7, AR060: 6, AR096: 5, AR104: 3, AR055: 3, AR061: 2 L0746: 2, H0592: 1, H0087: 1, L4501: 1, L0665: 1 and L0758: 1.	1p33-p32		120260, 120950, 120960, 138140, 178300, 187040, 246450, 600101, 600650, 600650, 600722, 600722
H2LAN34	705692	25	2 - 211	2200		T0115: 1, L0662: 1, L0766: 1, L0659: 1, L0809: 1, L0748: 1 and H0444: 1.			
HPMBZ40	711500	26	402 - 590	2201	Gly-13 to Val-36.		2		
HLYEP52	732342	27	2 - 721	2202			16p13.3		141750, 141800, 141800, 141800, 141800, 141850, 141850, 141850, 141850,

								141850, 156850, 186580, 191092, 600140, 600273, 601313, 601785
						AR096: 3, AR053: 2, AR060: 2, AR089: 2, AR033: 1, AR061: 1, AR055: 1, AR104: 0, AR039: 0 L0766: 2, S0354: 1, H0135: 1 and H0040: 1.	6p21.3	106300, 108800, 120290, 120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000,
HTTEC47	745343	28	329 - 433	2203				
HOFMO90	746416	29	113 - 391	2204	Arg-6 to Leu-12, Tyr-18 to Asp-25.			

								222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475
							17p13.3	113721, 247200, 600059, 601545
						AR055: 937, AR033: 824, AR061: 791, AR104: 733, AR060: 647, AR053: 378, AR089: 278, AR039: 203, AR096: 149 H0484: 1		
						L0740: 2, S0356: 1, H0040: 1, H0616: 1 and H0560: 1.		
HCHND34	762806	30	99 - 164	2205				
HAMGI86	785328	31	388 - 609	2206				

HLWCN67	794213	32	326 - 691	2207	Tyr-1 to Trp-9, Thr-44 to Leu-49.	L0766: 7, L0794: 6, L0758: 6, L0665: 4, L0439: 4, L0779: 4, H0590: 3, H0328: 3, L0598: 3, L0763: 3, L0666: 3, H0648: 3, L0754: 3, L0362: 3, H0506: 3, H0657: 2, H0661: 2, S0438: 2, L0646: 2, L0803: 2, L0375: 2, L0806: 2, L0809: 2, L0438: 2, L0744: 2, L0740: 2, L0747: 2, L0756: 2, L0731: 2, S0434: 2, L0589: 2, H0713: 1, S0114: 1, H0583: 1, H0255: 1, H0669: 1, H0663: 1, S0222: 1, H0497: 1, L0021: 1, L0022: 1, H0036: 1, H0052: 1, L0163: 1, H0239: 1, H0179: 1, H0615: 1, H0092: 1, H0553: 1, H0163: 1, H0038: 1, H0100: 1, S0440: 1, S0422: 1,		601199, 601199, 601682

						S0426: 1, UNKWN: 1, L5575: 1, L0644: 1, L0764: 1, L0662: 1, L0651: 1, L0653: 1, L0655: 1, L0661: 1, L0657: 1, L0526: 1, L0783: 1, L0793: 1, L0664: 1, S0374: 1, H0682: 1, H0658: 1, S0328: 1, H0539: 1, S0454: 1, S0406: 1, S0028: 1, L0750: 1, L0752: 1, L0759: 1, S0260: 1, H0445: 1, L0596: 1 and L0597: 1.		
HOFAC09	806819	33	866 - 3	2208		H0415: 3 and H0414: 2.	12	
HRDEL61	824886	34	630 - 824	2209	Lys-1 to Trp-7, Pro-29 to His-41, Thr-48 to Arg-65.	H0124: 1		
HDPOR60	828176	35	2 - 1924	2210	Gln-35 to Ser-43, Thr-52 to Cys-57, Glu-70 to Lys-79, Trp-121 to Lys-126, Ser-152 to Ser-162, Ser-183 to Phe-191, Val-206 to Thr-213, Ile-217 to Asn-222, Arg-237 to Lys-246, Thr-279 to Cys-285,	AR052: 3, AR089: 2, AR039: 2, AR055: 2, AR033: 2, AR053: 2, AR060: 2, AR096: 1, AR061: 1, AR104: 1 H0651: 8, L0744: 7, L0748: 6, H0620: 4, S0360: 3, S0142: 3, L0755: 3, H0638: 2, H0052: 2, H0123: 2,		

					His-336 to Leu-341, Pro-380 to Phe-387, Gln-405 to Asp-410, Thr-581 to Asp-595.	H0083: 2, H0328: 2, H0615: 2, H0039: 2, H0424: 2, H0163: 2, H0040: 2, H0059: 2, L0659: 2, L0519: 2, L0438: 2, S0378: 2, S3012: 2, S3014: 2, L0743: 2, L0750: 2, L0758: 2, L0589: 2, H0656: 1, H0662: 1, S0420: 1, S0358: 1, S0408: 1, H0637: 1, S0222: 1, H0574: 1, S0280: 1, L0021: 1, H0544: 1, H0546: 1, H0545: 1, H0081: 1, H0012: 1, H0266: 1, H0188: 1, H0687: 1, H0288: 1, H0292: 1, H0252: 1, H0673: 1, H0100: 1, H0641: 1, S0144: 1, S0002: 1, L0761: 1, L0643: 1, L0662: 1, L0650: 1, L0774: 1, L0375: 1, L0805: 1, L0776: 1, L0783: 1, L0793: 1, L0665: 1, S0053: 1, H0520: 1, H0658: 1, H0672: 1, H0522: 1,		

						S0406: 1, H0436: 1, S0037: 1, L0747: 1, L0749: 1, L0779: 1, L0731: 1, S0031: 1 and S0434: 1.			
HPRTS71	828574	36	3 - 458	2211	Pro-117 to Lys-134, Gln-136 to Trp-143.	L0748: 3, H0486: 2, L0599: 2, S0212: 1, S0358: 1, H0596: 1, H0032: 1, H0212: 1, S0002: 1, L0769: 1, L0775: 1, L0527: 1, L0519: 1, S0122: 1, L0754: 1 and L0750: 1.			
HOHBI90	828862	37	1 - 417	2212	Pro-1 to Pro-9, Arg-81 to Glu-87, Gln-114 to Glu-119.	S0250: 2, H0435: 2, S0152: 1 and L0745: 1.	19q13.1		164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716
HOHAL47	828872	38	295 - 879	2213	Gly-17 to Leu-40, Ala-47 to Phe-63, Glu-66 to Val-71, Ile-75 to His-92, Glu-112 to Asn-119, Asp-122 to Arg-135, Asn-140 to Phe-152, Asn-160 to Arg-166.	L0741: 3, H0069: 1, S0250: 1, H0032: 1, H0212: 1, L0774: 1, H0522: 1 and L0756: 1.	8p22-p21.3		148370, 238600, 238600, 238600, 238600, 600143, 601385, 602629

HYASE58	829298	39	2 - 694	2214	Phe-4 to Gln-10.	AR061: 13, AR089: 5, AR096: 5, AR033: 4, AR060: 4, AR052: 3, AR053: 3, AR055: 3, AR104: 3, AR039: 2 H0617: 11, L0748: 5, L0731: 4, H0181: 3, L0775: 3, H0670: 3, L0749: 3, H0656: 2, H0550: 2, H0083: 2, H0087: 2, H0658: 2, H0539: 2, L0747: 2, L0750: 2, H0341: 1, H0661: 1, H0402: 1, S0418: 1, S0360: 1, S0045: 1, H0393: 1, H0587: 1, H0333: 1, H0544: 1, H0009: 1, H0510: 1, H0688: 1, H0644: 1, H0606: 1, H0708: 1, S0366: 1, H0131: 1, L0770: 1, L0540: 1, L0783: 1, L0809: 1, L0789: 1, L0666: 1, L0665: 1, H0689: 1, H0682: 1, H0672: 1, L0743: 1, L0779: 1, L0759: 1, S0434: 1 and S0460: 1.		
HKAAH95	829958	40	2 - 418	2215	Arg-13 to Trp-31,	L0766: 7, L0731: 5,		

					Val-61 to Asn-67, Lys-87 to Arg-92, Leu-97 to Asp-109, Ser-129 to Asp-139.	H0542: 5, H0494: 3, L0526: 3, L0750: 3, L0752: 3, L0757: 3, L0588: 3, H0686: 2, T0049: 2, H0657: 2, H0341: 2, S0358: 2, T0008: 2, S0046: 2, L0471: 2, H0169: 2, L0763: 2, L0774: 2, H0519: 2, S0126: 2, S0027: 2, L0590: 2, H0423: 2, H0685: 1, H0650: 1, H0662: 1, H0504: 1, S0376: 1, S0360: 1, H0580: 1, H0431: 1, T0109: 1, H0069: 1, H0098: 1, T0048: 1, S0182: 1, H0023: 1, H0014: 1, H0617: 1, H0413: 1, H0129: 1, H0625: 1, H0132: 1, S0150: 1, H0130: 1, H0633: 1, L0520: 1, L0764: 1, L0648: 1, L0662: 1, L0775: 1, L0806: 1, L0379: 1, L0517: 1, L0540: 1, L0383: 1, L0809: 1, L0519: 1, H0520: 1, H0659: 1,

						H0658: 1, H0666: 1, S0328: 1, S0380: 1, S0032: 1, L0779: 1, L0758: 1, L0759: 1 and H0445: 1.		
HTTIQ02	829981	41	2 - 391	2216	Ala-96 to Lys-111, Cys-117 to Cys-128.			
HWACG91	830195	42	80 - 631	2217	Ser-2 to Arg-14, Ala-37 to Lys-45, Glu-60 to Leu-68, His-75 to Glu-82, Arg-92 to Ser-99, Gly-105 to Gln-110, Arg-119 to Phe-125.	H0581: 1 and H0521: 1.	6p12	180297, 230450, 263200, 601690
HUFBX52	830497	43	2 - 1531	2218	Thr-1 to Leu-9, Ser-46 to Leu-56, Glu-117 to Lys-124, Pro-129 to Asp-135, Ala-144 to Gln-150, Gly-156 to Lys-162, Phe-182 to Pro-187, Pro-196 to Gln-201, Lys-217 to Asp-227.	H0124: 8, H0550: 5, H0428: 3, H0586: 2, H0575: 2, H0555: 2, H0294: 1, S0282: 1, H0427: 1, H0196: 1, H0052: 1, H0194: 1, H0086: 1, H0123: 1, H0509: 1, H0684: 1, L0748: 1, L0747: 1, L0756: 1, S0192: 1 and H0506: 1.		
HWLJE49	831453	44	1 - 315	2219	Tyr-34 to His-42, Leu-44 to Leu-49.	S0358: 1, S0376: 1 and H0413: 1.	1p36	118210, 120550, 120570, 120575, 121800,

									130500, 133200, 155600, 171760, 171760, 185470, 211420, 230350, 255800, 601990, 602023, 602771
HLQBT44	832454	45	590 - 393	2220	Ala-23 to Asp-41.				
HSLGG58	833088	46	92 - 1450	2221	Gln-102 to Arg-109, Gly-177 to Pro-183, Pro-315 to Asn-323, Ser-361 to Cys-369, Ala-381 to Ser-391, Ser-419 to Ser-428.	AR061: 141, AR104: 122, AR055: 119, AR060: 115, AR052: 82, AR033: 78, AR039: 72, AR089: 67, AR053: 38, AR096: 32 L0759: 4, H0617: 3, L0749: 3, L0779: 3, H0253: 2, H0188: 2, H0165: 2, L0769: 2, L0637: 2, L0761: 2, L0665: 2, S0374: 2, H0682: 2, H0659: 2, L0748: 2, H0171: 1, H0685: 1, H0341: 1, H0255: 1, S0420: 1, H0586: 1, H0599: 1,	11q13			102200, 106100, 131100, 131100, 131100, 133780, 147050, 153700, 161015, 164009, 168461, 168461, 168461, 180721, 180840, 191181, 193235,

						H0510: 1, S6028: 1, H0428: 1, H0424: 1, H0102: 1, H0494: 1, H0560: 1, L0770: 1, L0662: 1, L0774: 1, L0659: 1, L0526: 1, L0518: 1, L0528: 1, L0787: 1, L0666: 1, L0663: 1, H0693: 1, H0658: 1, S0152: 1, S0028: 1, L0439: 1, L0745: 1, L0755: 1, L0758: 1 and L0601: 1.		209901, 232600, 259700, 259770, 600045, 600319, 600528, 601884
HCHBQ33	840756	47	148 - 480	2222	Arg-8 to Gln-19, Arg-25 to Lys-38.	H0483: 1, S0045: 1, S0046: 1, H0486: 1, H0012: 1, H0355: 1, S0364: 1, H0087: 1, H0413: 1, H0366: 1, S0028: 1, L0601: 1 and H0352: 1.	19p	
HDTMK30	840862	48	36 - 353	2223	Arg-2 to Pro-12, Lys-32 to Asn-37, His-75 to Asn-82.	H0486: 1, H0123: 1 and L0756: 1.	7q11.23	116860, 129900, 233700, 600079
HDPFX64	841088	49	320 - 1096	2224		L0757: 6, L0752: 5, L0439: 4, S0150: 2, L0774: 2, S3014: 2, L0747: 2, L0750: 2, S0276: 2, S0212: 1, S0007: 1, H0574: 1,	6pter-q12	

						H0581: 1, H0068: 1, S0036: 1, H0135: 1, T0067: 1, L0065: 1, H0529: 1, H0026: 1, L0762: 1, L0773: 1, L0521: 1, L0766: 1, S0052: 1, H0521: 1, L0748: 1, L0749: 1, L0731: 1, L0759: 1, L0485: 1, L0593: 1 and H0542: 1.		
HODFG71	843485	50	1013 - 951	2225	Asp-1 to Glu-6.	AR089: 3, AR060: 2, AR053: 2, AR096: 2, AR061: 2, AR039: 1, AR033: 1, AR055: 0, AR104: 0 H0615: 1		
HCE3I65	844534	51	2 - 244	2226		S0358: 1, H0052: 1, H0375: 1, H0087: 1, H0380: 1, H0435: 1, H0521: 1, S0390: 1 and L0366: 1.		
HSAVH65	847355	52	2 - 397	2227	Ser-90 to His-96, Arg-127 to Gln-132.	S0114: 2, H0686: 1, L0769: 1, L0644: 1, L0662: 1, L0774: 1, L0666: 1, H0659: 1, L0750: 1 and S0436: 1.		
HBXFT41	847647	53	707 - 817	2228	Glu-14 to Gly-23.	AR096: 2, AR089: 2, AR061: 1, AR039: 0, AR060: 0, AR055: 0,	19p13.3	108725, 120700, 133171,

						AR033: 0, AR104: 0 L0717: 1, H0438: 1, H0090: 1 and L0749: 1.		136836, 145981, 147141, 164953, 188070, 600957, 601238, 601846, 602216, 602477
HBMCM38	847821	54	373 - 290	2229		L0717: 1 and H0421: 1.		
HACBO42	849064	55	3 - 86	2230	Arg-19 to Pro-25.	L0776: 5, L0439: 4, L0805: 3, H0009: 2, L0438: 2, H0580: 1, S0280: 1, S0346: 1, H0674: 1, L0774: 1, L0384: 1, L0747: 1, L0786: 1, L0780: 1, L0752: 1, L0753: 1, S0031: 1, L0608: 1, S0412: 1 and L0698: 1.		
HODBF86	859572	56	276 - 338	2231		H0328: 2 and H0509: 1.		
HOABP90	859622	57	628 - 735	2232	Asp-23 to Asn-30.	AR089: 2, AR039: 2, AR096: 1, AR053: 1, AR104: 1, AR060: 1, AR061: 0, AR055: 0, AR033: 0 H0252: 1		

HE8UE42	862010	58	3 - 1610	2233	Glu-146 to Pro-151, Ala-231 to Ser-237, Asp-317 to Pro-322, Lys-365 to Gly-371, Phe-459 to Pro-464.	AR089: 8, AR060: 7, AR104: 5, AR096: 4, AR061: 3, AR055: 3 H0659: 5, L0740: 5, L0662: 4, L0771: 3, H0547: 3, H0521: 3, L0759: 3, L0362: 3, H0013: 2, H0597: 2, H0046: 2, H0083: 2, S0214: 2, H0674: 2, H0494: 2, L0517: 2, H0682: 2, L0747: 2, L0779: 2, S0434: 2, H0685: 1, H0583: 1, H0661: 1, H0638: 1, S0420: 1, S0360: 1, H0580: 1, H0438: 1, H0497: 1, H0599: 1, S0010: 1, H0581: 1, H0545: 1, H0457: 1, H0563: 1, L0163: 1, L0055: 1, H0673: 1, H0212: 1, H0591: 1, H0038: 1, H0616: 1, H0488: 1, S0142: 1, S0344: 1, L0763: 1, L0770: 1, L0767: 1, L0766: 1, L0776: 1, L0659: 1, L0782: 1, L0545: 1, H0144: 1,		

HUSJI59	862481	59	65 - 316	2234	Pro-1 to Met-6, Thr-47 to Asp-54.	L0748: 7, L0747: 6, L0769: 5, L0731: 4, S0444: 3, H0083: 3, H0412: 3, L0775: 3, H0670: 3, S0380: 3, L0779: 3, L0758: 3, H0352: 3, H0170: 2, S0007: 2, T0048: 2, H0309: 2, H0081: 2, H0413: 2, H0059: 2, H0641: 2, L0774: 2, L0655: 2, L0526: 2, H0144: 2, H0659: 2, H0710: 2, H0696: 2, S0027: 2, L0757: 2, L0615: 1, S0040: 1, H0295: 1, H0656: 1, S0116: 1, H0341: 1, H0484: 1, H0661: 1, H0664: 1, S0360: 1, S0408: 1, H0637: 1, H0393: 1, H0411: 1, H0392: 1, H0486: 1, H0318: 1, L0738: 1,	H0672: 1, S0152: 1, S0406: 1, H0627: 1, S0390: 1, L0748: 1, L0777: 1, L0758: 1, S0026: 1, H0665: 1 and H0543: 1.	8p23.2-p23.1	

						H0545: 1, L0471: 1, H0014: 1, T0023: 1, H0181: 1, H0606: 1, H0673: 1, S0366: 1, H0316: 1, H0163: 1, H0087: 1, H0625: 1, S0438: 1, H0633: 1, S0210: 1, L0598: 1, H0517: 1, L0520: 1, L0371: 1, L0772: 1, L0764: 1, L0521: 1, L0549: 1, L0803: 1, L0776: 1, L0540: 1, L0783: 1, L0809: 1, L0529: 1, L0663: 1, L0665: 1, S0374: 1, H0593: 1, S0126: 1, H0711: 1, H0658: 1, H0660: 1, H0648: 1, H0672: 1, S0378: 1, S0404: 1, S0406: 1, S0432: 1, S3014: 1, L0740: 1, L0752: 1, L0590: 1, L0599: 1, H0668: 1, S0026: 1, H0423: 1, H0422: 1, S0424: 1 and H0712: 1.		
HSSDM07	863515	60	221 - 1090	2235	Gln-1 to Ala-6, Arg-18 to His-24, Ala-80 to Val-88,		L0803: 3, H0556: 2, L0769: 2, L0800: 2, H0265: 1, S0134: 1,		

					Asp-97 to Asp-103, Arg-125 to Tyr-132, Arg-155 to Leu-161, Ser-167 to Asn-172, Gln-182 to Lys-187, Pro-206 to Thr-212, Glu-218 to Ser-228, Ser-236 to Pro-245.	S0358: 1, H0642: 1, H0575: 1, H0135: 1, L0809: 1, L0789: 1, S0330: 1, L0750: 1 and L0777: 1.		
HBCBW52	866444	61	1101 - 1352	2236	Phe-31 to Gln-36, Glu-51 to Ile-79.	L0596: 5, S0114: 2, H0370: 1, H0012: 1, H0620: 1 and S0038: 1.		
HOGAS18	867969	62	352 - 552	2237	Pro-1 to Ser-10, Leu-16 to Gly-21, Thr-43 to Thr-55, Lys-60 to Gly-67.	AR089: 6, AR060: 5, AR039: 4, AR096: 4, AR033: 2, AR055: 2, AR104: 1, AR061: 1, AR053: 0 H0435: 2, H0395: 1 and H0402: 1.		
HHSDL18	869701	63	494 - 628	2238		L0471: 1, S0051: 1, H0040: 1 and L0747: 1.		
HTFMS34	870486	64	2 - 460	2239	Tyr-1 to Trp-6.	L0511: 11, L0499: 6, L0509: 6, L0507: 5, L0502: 5, L0500: 5, L0508: 5, L0751: 5, L0493: 4, L0514: 4, L0504: 3, L0510: 3, L0809: 3, L0748: 3, L0505: 2, L0805: 2, L0515: 2, H0659: 2, H0670: 2, L0752: 2,		

HLDOG81	874506	65	1232 - 798	2240	Ile-81 to Arg-91.	S0424: 2, H0431: 1, H0150: 1, H0039: 1, H0674: 1, H0087: 1, T0041: 1, L0800: 1, L0768: 1, L0789: 1, L0664: 1 and L0749: 1.	1q22-q25	104770, 107300, 107670, 110700, 131210, 136132, 145001, 146790, 150292, 159440, 159440, 159440, 159440, 173610, 186780, 191030, 191315, 208250, 233710, 600923, 600995, 601412, 601518, 601652, 602491

HTXQF81	874608	66	2 - 628	2241	Pro-3 to Arg-8, Gly-34 to Thr-53, Asp-60 to Ser-65, Phe-76 to Lys-81.	L0751: 13, L0771: 10, L0748: 9, L0601: 7, S0356: 6, L0731: 6, L0758: 6, L0769: 4, L0565: 4, L0747: 4, L0756: 4, L0596: 4, H0598: 3, L0766: 3, S0052: 3, S0206: 3, L0750: 3, H0542: 3, H0294: 2, H0657: 2, L0785: 2, S0418: 2, S0358: 2, S0360: 2, H0586: 2, H0587: 2, H0575: 2, H0081: 2, H0620: 2, H0083: 2, H0271: 2, H0622: 2, H0617: 2, H0494: 2, S0142: 2, L0374: 2, L0521: 2, L0381: 2, L0775: 2, L0776: 2, L0659: 2, S0027: 2, L0777: 2, L0759: 2, H0445: 2, L0591: 2, L0604: 2, H0556: 1, T0002: 1, H0222: 1, S0040: 1, H0295: 1, S0218: 1, H0341: 1, S0180: 1, S0212: 1, H0484: 1, H0241: 1, S0420: 1, S0354: 1,	Xp11.23	300047, 300071, 300110, 300600, 301000, 301000, 301830, 309470, 309500, 309610, 309850, 311050, 312060

		H0580: 1, S0045: 1, S0046: 1, S0278: 1, L0623: 1, H0486: 1, T0060: 1, H0427: 1, H0253: 1, H0581: 1, H0204: 1, H0597: 1, H0123: 1, H0011: 1, S0362: 1, H0375: 1, H0594: 1, H0179: 1, H0188: 1, H0428: 1, H0604: 1, H0213: 1, H0031: 1, L0055: 1, H0068: 1, H0090: 1, H0634: 1, H0063: 1, H0380: 1, H0433: 1, H0560: 1, S0466: 1, H0641: 1, H0649: 1, S0344: 1, H0026: 1, L0763: 1, L0761: 1, L0772: 1, L0372: 1, L0662: 1, L0378: 1, L0783: 1, L0384: 1, L0383: 1, L0666: 1, L0664: 1, S0126: 1, S0380: 1, S0152: 1, H0521: 1, S0406: 1, H0555: 1, L0740: 1, L0749: 1, L0780: 1, L0757: 1, S0192: 1, S0276: 1 and H0543: 1.				

HCRNG90	874787	67	87 - 947	2242	Thr-5 to Gly-11, Arg-63 to Lys-73, Gln-92 to Glu-98, Ala-106 to Gly-112.	AR061: 56, AR055: 46, AR104: 43, AR096: 27, AR060: 25, AR089: 17 S0356: 4, L0809: 4, H0551: 2, S0342: 1, S0212: 1, H0544: 1, H0046: 1, L0803: 1, L0774: 1, S0126: 1 and S0152: 1.	6q14-q21	120110, 121014, 136550, 203310, 269920, 601666, 602772
HPWCL64	874891	68	2 - 601	2243	Glu-26 to Ser-33, Thr-82 to Phe-90, Met-107 to Asn-114, Thr-125 to Glu-131, His-175 to Asp-180.	L0766: 7, L0771: 4, L0752: 4, L0438: 2, L0756: 2, L0777: 2, L0780: 2, H0341: 1, T0115: 1, T0110: 1, L0776: 1, L0783: 1, L0663: 1, S0044: 1, L0744: 1, L0439: 1, L0754: 1, L0750: 1 and L0779: 1.		
HWLMV62	874930	69	2 - 463	2244		H0140: 1, S0116: 1, S0376: 1, S0360: 1, L0695: 1, H0412: 1, H0641: 1, L0662: 1, L0803: 1, L0774: 1, L0527: 1, L0659: 1, L0663: 1, L0664: 1, L0665: 1, H0682: 1, H0435: 1, H0648: 1, L0743: 1, L0731: 1,		

H2MAC06	874931	70	2 - 763	2245		S0434: 1, L0596: 1 and L0362: 1.	
						AR096: 102, AR055: 51, AR089: 46, AR060: 30, AR104: 29, AR061: 19 S0406: 23, L0362: 22, S0410: 13, H0593: 12, H0674: 10, S0434: 9, L0764: 8, S0358: 7, L0646: 7, H0506: 6, H0509: 5, L0809: 5, H0435: 5, S0376: 4, L0765: 4, L0382: 4, L0751: 4, H0686: 3, H0252: 3, H0169: 3, H0670: 3, S0330: 3, H0656: 2, S0116: 2, S0132: 2, H0581: 2, H0596: 2, S0314: 2, T0023: 2, H0059: 2, S0440: 2, L0372: 2, L0381: 2, L0659: 2, L0666: 2, H0690: 2, L0750: 2, L0596: 2, L0601: 2, H0171: 1, S0430: 1, H0650: 1, H0663: 1, H0306: 1, S0360: 1, T0104: 1, T0071: 1, H0421: 1,	

						H0251: 1, H0263: 1, H0204: 1, H0231: 1, H0039: 1, H0622: 1, L0194: 1, L0483: 1, S0368: 1, H0032: 1, H0090: 1, H0040: 1, H0488: 1, H0494: 1, S0352: 1, H0646: 1, L0762: 1, L0800: 1, L0553: 1, L0648: 1, L0775: 1, L0376: 1, L0653: 1, L0540: 1, L0783: 1, L0664: 1, S0053: 1, S0374: 1, H0682: 1, H0684: 1, H0658: 1, H0648: 1, H0672: 1, S0328: 1, S0152: 1, S0432: 1, S0436: 1 and L0600: 1.		
HWLRF06	875093	71	2 - 385	2246	Gly-2 to Gly-7, Glu-9 to Gln-16, Cys-24 to Gly-30, Ala-35 to Ala-45, Ala-55 to Ala-60, Cys-79 to Leu-90, Asp-95 to Asp-103.	S0212: 1 and S0360: 1.		
HODDO41	875352	72	323 - 487	2247	Glu-29 to Asn-42.	H0328: 2		
HCHMQ74	875371	73	3 - 440	2248	Pro-6 to Leu-25, Ser-34 to Arg-53, Pro-71 to Gly-81,	S0330: 2, L0748: 2, H0484: 1, T0114: 1 and L0764: 1.		

HT3AI55	875682	74	1 - 504	2249	Ser-83 to Glu-94.	L0749: 3, S0356: 2, L0766: 2, H0170: 1, H0140: 1, L0770: 1, L0662: 1, L0659: 1, H0682: 1, L0752: 1, L0731: 1, L0758: 1 and H0542: 1.		
HMVBD68	876052	75	130 - 276	2250		L0745: 6, S0360: 4, S0440: 2, H0341: 1, S0212: 1, L0717: 1, H0587: 1, H0497: 1, H0574: 1, H0687: 1, H0428: 1, S0422: 1, L0667: 1, L0645: 1, L0662: 1, L0768: 1, L0649: 1, L0518: 1, H0435: 1, S0380: 1, H0518: 1, L0754: 1, L0746: 1, S0434: 1, L0592: 1 and S0424: 1.		
HOCTA74	876487	76	65 - 292	2251	Lys-1 to Ser-7.	L0748: 5, L0764: 4, L0774: 4, L0758: 3, L0662: 2, L0751: 2, L0608: 2, L0760: 1, S0444: 1, H0331: 1, H0263: 1, H0674: 1, L0770: 1, L0649: 1, L0803: 1, L0775: 1, L0809: 1, L0666: 1,		

						L0663: 1, L0665: 1, S0374: 1, L0565: 1, H0648: 1, L0752: 1, L0596: 1, L0361: 1, S0026: 1 and H0506: 1.		
HISET05	876686	77	433 - 909	2252	Ala-1 to Thr-8, Ala-15 to Pro-23, Pro-68 to Gly-78, Ser-82 to Gly-93, Gly-118 to Ala-135.	L0761: 2, L0800: 1, L0773: 1, L0803: 1 and H0539: 1.			
HCRQM22	876696	78	3 - 332	2253	Arg-1 to Arg-7, Gly-72 to Asp-78, Lys-83 to Gln-90.	S0356: 1, H0318: 1, H0038: 1 and H0040: 1.	12p13	103950, 120580, 131440, 139130, 142680, 176260, 190450, 200990, 216950, 600228, 600414, 600618, 602096	
HLHTC92	877310	79	143 - 478	2254	Met-2 to Leu-12, Ser-16 to Asp-23, Gly-38 to Lys-45.	H0208: 1, H0263: 1, H0412: 1 and L0754: 1.			
H2CAA49	879484	80	1426 - 203	2255	Lys-44 to His-50, Thr-110 to Pro-116, Lys-178 to Gln-183, Pro-196 to Lys-205,				

HETKQ94	880545	81	2 - 943	2256	Arg-214 to Thr-220, Asp-295 to Leu-301, Pro-316 to Glu-324, Glu-331 to Tyr-336, Gly-347 to Val-354.	Lys-84 to Gly-98, Asp-126 to Pro-134, Ser-208 to His-218, Tyr-233 to Asp-243, Arg-288 to Pro-295, Gly-303 to Ser-314.	AR052: 3, AR061: 3, AR089: 3, AR096: 2, AR055: 2, AR060: 2, AR053: 2, AR033: 2, AR039: 1, AR104: 1 H0046: 6, L0769: 3, L0748: 3, L0779: 3, L0777: 3, S0358: 2, S0005: 2, H0618: 2, L0662: 2, L0776: 2, H0547: 2, L0439: 2, L0751: 2, L0600: 2, S0040: 1, S0134: 1, S0218: 1, H0650: 1, S0418: 1, S0045: 1, H0549: 1, H0333: 1, H0486: 1, H0253: 1, H0231: 1, H0620: 1, H0014: 1, S0250: 1, H0063: 1, H0087: 1, H0264: 1, H0280: 1, L0640: 1, L0770: 1, L0764: 1, L0768: 1, L0806: 1, L0663: 1, L0664: 1, H0520: 1,		

						H0539: 1, S0390: 1, S0028: 1, L0747: 1, L0758: 1 and S0424: 1.		
HOFMO23	882466	82	5 - 502	2257	Asn-40 to Val-45.	AR089: 2, AR096: 1, 7 AR060: 1, AR039: 0, AR061: 0, AR033: 0, AR104: 0 H0415: 2		
HNTNP58	882787	83	2162 - 2383	2258		AR039: 105, AR096: 91, AR089: 70, AR104: 48, AR033: 48, AR053: 46, AR060: 43, AR055: 18, AR061: 16 S0444: 5, H0436: 5, L0521: 3, H0684: 3, H0659: 3, L0758: 3, S0410: 2, H0250: 2, S0049: 2, L0471: 2, H0266: 2, H0625: 2, S0440: 2, L0805: 2, H0690: 2, L0747: 2, L0779: 2, S0026: 2, H0422: 2, H0170: 1, H0265: 1, H0556: 1, H0686: 1, S0040: 1, S0342: 1, H0294: 1, H0341: 1, H0664: 1, H0638: 1, S0007: 1, S0046: 1, H0351: 1, H0559: 1, H0427: 1,		

						H0421: 1, L0738: 1, H0545: 1, H0083: 1, H0628: 1, H0321: 1, H0412: 1, T0069: 1, H0202: 1, H0494: 1, S0422: 1, L0763: 1, L0769: 1, L0772: 1, L0764: 1, L0657: 1, L0783: 1, L0809: 1, L0519: 1, L0665: 1, H0698: 1, H0691: 1, H0724: 1, H0520: 1, H0547: 1, S0126: 1, H0670: 1, H0660: 1, H0666: 1, H0648: 1, H0134: 1, S0028: 1, L0756: 1, L0752: 1, S0434: 1, L0589: 1, H0136: 1, S0194: 1, S0276: 1, H0543: 1 and H0423: 1.	11p15	108985, 186921, 602092	
HOFNY28	888480	84	3 - 479	2259		AR053: 6, AR089: 6, AR039: 6, AR060: 5, AR104: 4, AR096: 4, AR033: 3, AR055: 3, AR061: 2 H0415: 1			
HE8MQ01	889128	85	2612 - 2478	2260	Ser-8 to Cys-14, Trp-34 to Phe-45.	H0729: 1, H0392: 1, H0013: 1, H0318: 1, H0009: 1, H0328: 1,			

						H0615: 1, T0041: 1, L0662: 1, L0768: 1, L0522: 1, H0436: 1, H0444: 1 and S0308: 1.		
HE2RG21	891139	86	2 - 553	2261	Arg-1 to Asn-14, Lys-47 to Glu-53, Ser-59 to Ser-70, Gln-82 to Gly-93, Glu-100 to Glu-105, Gly-123 to Ser-129, Phe-164 to Lys-173.			
HHENW77	894855	87	3 - 341	2262		AR033: 8, AR104: 6, AR089: 3, AR039: 3, AR060: 2, AR061: 2, AR096: 2, AR053: 0, AR055: 0 H0539: 9, H0052: 5, T0010: 4, L0439: 4, L0769: 3, L0443: 2, H0046: 2, L0456: 2, L0770: 2, L5574: 2, L0803: 2, L0664: 2, L0438: 2, L0751: 2, L0747: 2, S0436: 2, H0542: 2, H0717: 1, S0010: 1, H0744: 1, H0562: 1, H0012: 1, S0388: 1, H0510: 1, H0418: 1, H0617: 1, S0038: 1, L0351: 1,		

						L0762: 1, L0631: 1, L0638: 1, L5565: 1, L0764: 1, L0794: 1, L0649: 1, L0774: 1, L0806: 1, L0655: 1, L0659: 1, L0635: 1, L0382: 1, L0788: 1, L0666: 1, H0520: 1, H0658: 1, H0670: 1, H0660: 1, H0648: 1, H0696: 1, L0742: 1, L0750: 1, L0780: 1, L0752: 1, H0445: 1, H0543: 1, H0423: 1 and H0422: 1.		
HOFNU55	897344	88	705 - 517	2263	Phe-58 to Ala-63.	H0415: 2			
HE8TE40	897862	89	86 - 1165	2264	Ser-50 to Thr-57, Pro-89 to Arg-96, Thr-128 to Glu-137, Cys-150 to Asp-155, Arg-176 to Lys-184, Glu-186 to Cys-201, Ala-238 to Ala-247, Pro-270 to Pro-277, Thr-283 to Thr-295, Leu-329 to Arg-338, Gln-345 to Arg-350.	L0803: 8, S0408: 4, L0804: 3, L0805: 3, L0766: 2, L0779: 2, S0114: 1, H0341: 1, H0662: 1, S0222: 1, H0486: 1, H0013: 1, H0581: 1, H0615: 1, H0038: 1, S0440: 1, L0800: 1, L0521: 1, L0794: 1, L0774: 1, L0806: 1, L0526: 1, L0789: 1, L0790: 1, L0792: 1, L4501: 1, L0663: 1, H0519: 1,			

HNTCH73	900546	90	114 - 1418	2265	Ala-69 to Ser-77, Arg-95 to Lys-102, Gln-117 to Gln-125, Tyr-133 to Arg-140, Pro-157 to Ser-163, Glu-190 to Phe-202, Trp-251 to Asn-258, Gln-270 to Gln-277, Leu-285 to Gly-290, Thr-312 to Arg-337.	AR089: 3, AR096: 2, AR060: 1, AR033: 1, AR104: 1, AR061: 1, AR055: 0, AR039: 0, AR053: 0 H0686: 4, H0574: 3, H0412: 3, S0045: 2, H0024: 2, L0777: 2, L0759: 2, L0603: 2, H0664: 1, S0418: 1, S0358: 1, S0360: 1, H0208: 1, S0046: 1, H0619: 1, H0549: 1, H0632: 1, H0485: 1, H0309: 1, H0085: 1, H0235: 1, L0471: 1, H0620: 1, H0083: 1, S6028: 1, H0622: 1, S0366: 1, S0464: 1, L0065: 1, L0638: 1, L0637: 1, L0764: 1, L0773: 1, L0768: 1, L0774: 1, L0659: 1, H0144: 1, S0374: 1, L0438: 1, H0547: 1, H0519: 1, S0406: 1, S0380: 1, H0696: 1, L0612: 1, L0745: 1, L0756: 1, L0780: 1, L0752: 1 and H0543: 1.	14q22-q23	107970, 112262, 182600, 182870, 182870, 182870, 232700, 602086

						H0627: 1, H0631: 1, L0749: 1, L0779: 1, S0026: 1, H0136: 1 and S0194: 1.		
HHFBY53	902534	91	3 - 299	2266	Lys-9 to Ser-15, Pro-29 to Ala-35.	AR060: 3, AR033: 1, AR089: 1, AR104: 1, AR096: 0, AR055: 0, AR039: 0, AR061: 0 S0360: 3, H0670: 3, H0556: 2, H0292: 2, H0686: 1, H0685: 1, S0134: 1, S0116: 1, H0662: 1, H0640: 1, S0300: 1, H0586: 1, H0642: 1, L0622: 1, L0586: 1, H0253: 1, H0050: 1, H0057: 1, T0006: 1, L0653: 1, L0657: 1, L0659: 1, L0787: 1, L0666: 1, L0663: 1, H0547: 1, H0659: 1, H0648: 1, H0436: 1, L0748: 1, L0362: 1, L0361: 1, H0653: 1, H0542: 1, H0423: 1 and H0422: 1.	Xq13.1	304040, 305100, 305450, 309605, 312760, 314250, 314580
HDPIE44	904763	92	1 - 2418	2267	Pro-1 to Arg-13, Pro-71 to Ser-77, Asn-107 to Ser-122, Val-150 to Pro-155,	AR052: 2, AR033: 2, AR096: 2, AR053: 1, AR060: 1, AR104: 1, AR055: 1, AR089: 1,		

				Ser-235 to Lys-241, Arg-349 to Phe-360, Thr-363 to Glu-376, Gln-438 to Thr-443, Leu-466 to Ala-472, Lys-475 to Thr-484, Ser-511 to Val-516, Glu-544 to Ser-550, Tyr-627 to Thr-632, Arg-650 to Lys-658, Asp-683 to Asn-688, Glu-740 to Glu-746, Tyr-755 to Glu-760.	AR061: 0, AR039: 0 S0358: 3, H0622: 2, H0553: 2, H0090: 2, L0769: 2, L0794: 2, H0547: 2, S0126: 2, L0747: 2, H0265: 1, S0418: 1, H0208: 1, S0045: 1, H0486: 1, H0052: 1, H0046: 1, H0024: 1, H0051: 1, H0375: 1, H0634: 1, H0488: 1, T0042: 1, H0494: 1, H0561: 1, S0438: 1, H0538: 1, L0800: 1, L0803: 1, L0804: 1, L0805: 1, L4501: 1, H0521: 1, H0555: 1, L0779: 1, S0436: 1 and H0506: 1.		
HHSAX10	904783	93	3 - 683	2268	Lys-33 to Arg-46, Met-141 to His-150, Thr-205 to Thr-211, Arg-218 to Ser-226.	AR033: 35, AR104: 29, AR089: 13, AR096: 11, AR060: 9, AR052: 8, AR053: 7, AR055: 6, AR039: 5, AR061: 2 L0745: 7, L0756: 7, L0598: 6, S0346: 5, S0036: 5, L0769: 4, L0777: 4, L0731: 4, S0010: 3, H0052: 3,		

		S0051: 3, L0770: 3, L0803: 3, L0438: 3, L0758: 3, S0031: 3, H0170: 2, H0438: 2, S0049: 2, T0010: 2, H0687: 2, H0038: 2, H0616: 2, L0351: 2, L0794: 2, L0806: 2, L0790: 2, H0660: 2, L0439: 2, L0751: 2, L0754: 2, L0366: 2, S6024: 1, S0300: 1, H0351: 1, S0222: 1, H0013: 1, T0048: 1, H0194: 1, H0009: 1, H0565: 1, H0050: 1, H0242: 1, H0051: 1, H0201: 1, S0388: 1, H0083: 1, H0510: 1, H0428: 1, H0031: 1, L0455: 1, S0039: 1, H0561: 1, L0369: 1, L0520: 1, L0371: 1, L0638: 1, L0796: 1, L0637: 1, L0662: 1, L0774: 1, L0635: 1, L0809: 1, L0666: 1, L0663: 1, H0659: 1, H0648: 1, H0651: 1, S0330: 1, S3014: 1,				

HPIAX83	906066	94	156 - 2459	2269	Gly-1 to Ser-9, Arg-127 to Arg-138, Tyr-188 to Arg-193, Arg-246 to His-254, Ser-428 to Arg-434, Lys-487 to Lys-493, Gly-515 to Leu-523, Leu-545 to Asn-550, Leu-579 to Ala-588, Lys-631 to Cys-639, Lys-717 to Ser-724.	L0748: 1, L0740: 1, L0780: 1, L0752: 1, L0753: 1, L0759: 1, S0260: 1, L0589: 1 and L0592: 1.	AR052: 5, AR033: 4, AR061: 3, AR089: 3, AR060: 3, AR055: 3, AR104: 3, AR096: 3, AR053: 3, AR039: 1 L0157: 4, L0777: 4, L0759: 4, H0551: 3, H0144: 3, L0438: 3, S0360: 2, S0036: 2, L0771: 2, L0775: 2, L0659: 2, L0783: 2, S0374: 2, H0658: 2, H0672: 2, L0591: 2, S0342: 1, S0358: 1, H0722: 1, H0427: 1, S0346: 1, H0581: 1, H0327: 1, L0471: 1, S0051: 1, S0003: 1, H0040: 1, H0561: 1, S0440: 1, S0150: 1, L0770: 1, L0764: 1, L0662: 1, L0774: 1, L0526: 1, L0519: 1, L0666: 1, L0663: 1, L0665: 1, L0352: 1,		

						H0547: 1, H0684: 1, H0659: 1, H0648: 1, H0539: 1, S0152: 1, S0028: 1, L0756: 1, L0779: 1, L0731: 1, L0758: 1, S0434: 1, S0436: 1, L0362: 1, H0542: 1 and H0422: 1.		
HOFNG28	908746	95	3 - 401	2270	Gln-76 to Asp-82, Lys-96 to Gln-103.	AR052: 2, AR089: 2, AR055: 1, AR060: 1, AR096: 1, AR033: 1, AR061: 1, AR104: 1, AR053: 0, AR039: 0 H0415: 2		
HOFOB27	911947	96	565 - 1491	2271	Cys-1 to Cys-15, Arg-24 to Gly-31, Lys-37 to Glu-47, Glu-85 to Lys-92, Tyr-102 to Gly-107, Asp-166 to Lys-181, Phe-216 to His-229, Gln-248 to Phe-254, Arg-260 to Cys-267, Ser-285 to Arg-296.	AR053: 2, AR089: 2, AR055: 1, AR060: 1, AR096: 1, AR061: 0, AR039: 0, AR033: 0, AR104: 0 L0758: 6, H0620: 4, L0769: 4, L0777: 4, H0556: 3, S0420: 2, L0770: 2, L0803: 2, L0776: 2, L0659: 2, L0666: 2, S0374: 2, L0748: 2, L0591: 2, H0265: 1, H0685: 1, S0134: 1, H0484: 1, S0354: 1, S0360: 1, S0408: 1, H0580: 1,		

					H0415: 1, H0587: 1, H0599: 1, H0053: 1, H0052: 1, H0081: 1, H0288: 1, H0428: 1, H0059: 1, H0633: 1, L0766: 1, L0650: 1, L0805: 1, L0655: 1, L0606: 1, L0791: 1, L0664: 1, H0144: 1, L0438: 1, H0547: 1, H0690: 1, H0682: 1, S0378: 1, H0521: 1, L0439: 1, L0740: 1, L0751: 1, L0755: 1, L0595: 1, H0665: 1, S0424: 1 and H0677: 1.	2p14-p16	126600, 126600, 136435, 160980, 203800, 600678
HHBHJ45	913831	97	2 - 1498	2272	Ala-65 to Lys-73, Phe-135 to Arg-140, Glu-174 to Pro-184, Glu-207 to Ala-212, Lys-220 to Asp-231, Glu-236 to Lys-252, Glu-268 to Asn-286, Leu-378 to Ser-384, Gln-421 to Gly-437, Leu-448 to Asp-453, Glu-485 to Trp-495.	L0775: 6, H0659: 5, L0438: 4, L0747: 4, S0408: 3, L0439: 3, H0040: 2, L0509: 2, L0513: 2, L0751: 2, L0756: 2, L0755: 2, L0596: 2, L0362: 2, S0040: 1, H0341: 1, S0354: 1, H0411: 1, H0497: 1, S0049: 1, H0373: 1, T0010: 1, S0214: 1, S0366: 1, H0413: 1, L0769: 1, L0772: 1, L0764: 1,		

					L0626: 1, L0768: 1, L0387: 1, L0766: 1, L0498: 1, L0650: 1, L0774: 1, L0375: 1, L0508: 1, L0655: 1, L0657: 1, L0783: 1, L0663: 1, L0352: 1, H0547: 1, H0593: 1, H0648: 1, S0136: 1, H0522: 1, H0696: 1, L0750: 1, L0758: 1, S0434: 1, L0604: 1 and H0423: 1.		
HHPDV90	914163	98	1188 - 1045	2273	Asn-21 to Lys-39, Leu-43 to Lys-48.	AR096: 7, AR089: 6, AR060: 5, AR053: 4, AR104: 4, AR033: 3, AR055: 3, AR061: 2 L0777: 13, L0766: 6, L0803: 4, L0752: 4, L0769: 3, L0794: 3, L0747: 3, L0755: 3, L0805: 2, L0776: 2, L0655: 2, L0659: 2, H0547: 2, L0759: 2, L0596: 2, H0650: 1, S0360: 1, S0010: 1, H0150: 1, H0024: 1, H0051: 1, H0553: 1, H0090: 1, H0412: 1, L0761: 1, L0771: 1,		

					L0363: 1, L0804: 1, H0519: 1, S0122: 1, H0435: 1, H0658: 1, H0648: 1, L0740: 1, L0750: 1, L0757: 1, H0543: 1 and H0423: 1.		
HWMMQ47	915068	99	2 - 232	2274	Gly-41 to Gly-53, Gly-65 to Arg-77.	S0444: 5, S0358: 4, S0410: 4, S0406: 4, L0759: 4, L0604: 4, H0686: 3, H0728: 3, H0083: 3, H0659: 3, H0658: 3, L0747: 3, L0581: 3, H0657: 2, H0341: 2, H0484: 2, H0734: 2, H0550: 2, S0222: 2, H0052: 2, T0006: 2, S0364: 2, H0038: 2, H0413: 2, S0422: 2, L0768: 2, L0774: 2, L0775: 2, L0783: 2, H0690: 2, H0670: 2, H0648: 2, S0380: 2, L0757: 2, L0758: 2, L0588: 2, L0608: 2, L0601: 2, S0026: 2, H0170: 1, S0114: 1, H0381: 1, S0282: 1, H0638: 1, S0442: 1, S0360: 1, H0730: 1, H0735: 1,		

HBGNY08	915214	100	429 - 70	2275		S0045: 1, S0046: 1, S0132: 1, H0587: 1, H0559: 1, L0622: 1, H0486: 1, T0114: 1, T0082: 1, S0010: 1, H0421: 1, H0173: 1, H0231: 1, L0738: 1, H0569: 1, H0688: 1, H0428: 1, H0213: 1, H0166: 1, H0674: 1, H0616: 1, H0412: 1, H0625: 1, L0065: 1, S0438: 1, H0509: 1, H0131: 1, H0529: 1, L0763: 1, L0500: 1, L0769: 1, L0638: 1, L0764: 1, L0662: 1, L0766: 1, L0803: 1, L0632: 1, L0655: 1, L0543: 1, L5623: 1, L0664: 1, H0214: 1, H0732: 1, S0028: 1, L0741: 1, L0742: 1, L0754: 1, L0749: 1, L0752: 1, L0731: 1, S0436: 1, H0668: 1, H0136: 1 and H0352: 1.	H0373: 1 and H0617: 1.	14q11-q12	160760, 160760, 182600,

								600243, 600792, 601369, 602086, 602279, 602279
HODGH45	917394	101	567 - 941	2276	Arg-7 to Arg-12, Pro-77 to Asp-82.	H0615: 2 and S0052: 1.		
HWLKE58	917716	102	3 - 536	2277	Pro-1 to Val-11, Asp-25 to Glu-34, Arg-117 to Gln-122, Thr-147 to Arg-152, Glu-160 to Cys-172.	L0731: 7, L0605: 6, L0766: 4, L0655: 4, L0659: 4, L0756: 4, L0803: 3, H0648: 3, L0777: 3, S0358: 2, S0408: 2, L0021: 2, H0014: 2, T0010: 2, L0143: 2, H0641: 2, L0638: 2, L0662: 2, L0794: 2, L0776: 2, L0657: 2, L0809: 2, L0666: 2, L0663: 2, L0751: 2, L0755: 2, L0758: 2, L0588: 2, H0543: 2, H0170: 1, H0657: 1, S0212: 1, H0661: 1, H0663: 1, S0420: 1, S0360: 1, L0717: 1, L0586: 1, L0105: 1, H0318: 1, H0581: 1, H0052: 1, H0309: 1, L0157: 1,		

HRADL40	919433	103	1 - 942	2278	Phe-1 to Arg-7, Arg-40 to Gly-46, Lys-96 to Ser-102, Cys-126 to Ala-131, Asp-260 to Leu-265, Arg-308 to Gly-314.	L0471: 1, H0024: 1, H0354: 1, S0003: 1, H0328: 1, H0615: 1, H0169: 1, H0163: 1, H0090: 1, H0272: 1, T0041: 1, S0440: 1, S0142: 1, S0210: 1, L0372: 1, L0645: 1, L0764: 1, L0651: 1, L0656: 1, L0789: 1, L0665: 1, S0126: 1, H0682: 1, H0435: 1, H0659: 1, S0380: 1, H0518: 1, H0696: 1, L0439: 1, L0740: 1, L0746: 1, L0750: 1, L0779: 1, L0752: 1 and S0260: 1.	H0424: 5, H0550: 3, L0769: 3, L0601: 3, S0408: 2, H0592: 2, H0560: 2, L0761: 2, L0774: 2, L0806: 2, L0776: 2, H0659: 2, L0777: 2, L0780: 2, L0759: 2, H0136: 2, S0424: 2, H0170: 1, H0556: 1, H0341: 1, S0418: 1, S0356: 1, S0442: 1, S0360: 1,	16p13.3	141750, 141800, 141800, 141800, 141800, 141850, 141850, 141850, 141850, 141850, 156850, 186580,

					S0278: 1, H0390: 1, T0048: 1, H0620: 1, H0510: 1, H0687: 1, H0688: 1, H0622: 1, T0006: 1, H0033: 1, H0213: 1, H0617: 1, S0450: 1, S0440: 1, L0646: 1, L0773: 1, L0662: 1, L0803: 1, L0653: 1, L0655: 1, L0657: 1, L0656: 1, L0659: 1, L0365: 1, L0783: 1, L0789: 1, L0663: 1, L0665: 1, H0547: 1, H0658: 1, H0660: 1, H0648: 1, S0380: 1, H0696: 1, H0555: 1, S0027: 1, S0028: 1, L0748: 1, L0439: 1, L0751: 1, L0752: 1, L0596: 1, L0599: 1, L0604: 1 and H0543: 1.		191092, 600140, 600273, 601313, 601785
HOFMP73	919895	104	92 - 1129	2279	Ala-24 to Phe-30, Asn-42 to Trp-48, Val-57 to Leu-62, Ser-90 to Gln-96, Lys-104 to Cys-112, Gly-150 to Gly-159, Tyr-180 to Cys-186,	AR060: 2, AR061: 2, AR055: 1, AR089: 1, AR096: 1, AR033: 0, AR039: 0 H0415: 2 and H0414: 1.	8p22	148370, 238600, 238600, 238600, 238600, 600143, 601385,

								602629
HOFMS02	920253	105	21 - 272	2280	Pro-193 to Asp-210, Pro-220 to Ser-235, Ser-306 to Asp-313, Thr-339 to Ile-346.	H0415: 4		
HUVHD12	921707	106	1 - 666	2281	Phe-24 to Glu-48. Tyr-44 to Trp-63, Thr-84 to Thr-90, Gln-111 to Tyr-116.	L0805: 9, L0747: 9, L0770: 8, L0794: 8, L0756: 8, H0271: 7, L0769: 5, L0748: 5, L0750: 5, H0305: 4, L0766: 4, L0804: 4, L0809: 4, H0265: 3, H0052: 3, H0051: 3, H0623: 3, L0803: 3, L0775: 3, H0556: 2, H0441: 2, H0486: 2, H0069: 2, H0050: 2, H0620: 2, S0051: 2, H0416: 2, S0036: 2, H0135: 2, S0002: 2, L0761: 2, L0768: 2, L0666: 2, H0144: 2, L0438: 2, L0439: 2, L0777: 2, S0114: 1, L0785: 1, S0001: 1, S0035: 1, H0402: 1, H0638: 1, H0580: 1, S0045: 1, S0046: 1, S0222: 1, H0333: 1, H0635: 1, H0036: 1,		

					H0581: 1, H0024: 1, H0687: 1, H0068: 1, H0040: 1, H0412: 1, H0056: 1, S0352: 1, L0763: 1, L0796: 1, L5575: 1, L0800: 1, L0375: 1, L0651: 1, L0788: 1, L0790: 1, L0791: 1, L0663: 1, L0665: 1, S0052: 1, S0428: 1, S0216: 1, H0519: 1, H0593: 1, H0658: 1, H0660: 1, H0555: 1, L0743: 1, L0786: 1, L0779: 1, L0758: 1, S0436: 1, L0361: 1, L0366: 1, S0106: 1 and H0423: 1.	L0752: 24, L0751: 7, L0748: 6, L0777: 6, L0775: 5, L0742: 5, L0749: 5, S0358: 4, L0776: 4, L0756: 4, S0376: 3, L0757: 3, S0212: 2, S0444: 2, S0010: 2, L0770: 2, L0764: 2, L0773: 2, L0774: 2, H0519: 2, L0743: 2, L0740: 2, L0731: 2, L0758: 2,
				2282			
				327 - 809			
				107			
				922191			
				HMVDQ41			

					L0604: 2, L0603: 2, S0298: 1, H0661: 1, S0442: 1, S0354: 1, S0360: 1, S0408: 1, H0632: 1, H0156: 1, H0421: 1, H0196: 1, H0052: 1, L0738: 1, H0009: 1, L0471: 1, H0239: 1, S0003: 1, T0067: 1, H0413: 1, H0059: 1, S0438: 1, S0440: 1, L0768: 1, L0794: 1, L0766: 1, L0803: 1, L0804: 1, L0375: 1, L0806: 1, L0783: 1, S0374: 1, H0659: 1, S0328: 1, S0152: 1, S0404: 1, S0406: 1, S0027: 1, L0439: 1, L0779: 1, L0753: 1, L0755: 1, L0759: 1 and S0242: 1.			
HODGI03	922879	108	3 - 227	2283	Lys-1 to Trp-26, Lys-34 to Ile-42.	H0615: 2		
HODHD14	922955	109	1 - 174	2284		H0615: 3 and H0352: 1.		
HODDC03	925296	110	3 - 311	2285	Lys-10 to Arg-32.	H0328: 1 and H0615: 1.		
HVCAG04	925735	111	1368 - 781	2286			2q21-q22	133510, 133510,

HCRCE02	925837	112	31 - 129	2287		L0756: 6, L0776: 2, L0744: 2, H0486: 1, H0327: 1, S0003: 1, H0090: 1, L0761: 1, L0662: 1, L0766: 1, L0518: 1, H0659: 1, H0670: 1, S0406: 1, L0777: 1, L0780: 1, L0605: 1, L0366: 1 and H0423: 1.		165320, 223000, 223000, 256030
HHERA91	926067	113	2028 - 2399	2288	Ser-59 to Leu-66, Leu-76 to Trp-87, Arg-92 to Gly-105.	AR053: 3, AR089: 3, AR096: 2, AR060: 2, AR033: 2, AR061: 1, AR104: 1, AR055: 0		
HAGDL82	928396	114	2 - 94	2289	Pro-21 to Ala-28.			
HWBDS34	930484	115	3 - 983	2290	Pro-18 to Leu-25, Asp-72 to Ser-82, Pro-97 to Gly-107, Leu-110 to Ser-137.	S0212: 4, H0580: 1, S0045: 1, H0351: 1, S0010: 1, S0003: 1, H0560: 1, S0002: 1 and L0604: 1.		
H6ESA39	933568	116	2 - 1150	2291	Ala-9 to Trp-14.	L0758: 4, H0556: 3, L0751: 3, S0408: 2, H0618: 2, L0768: 2, H0547: 2, H0660: 2, L0754: 2, L0779: 2,		

					H0661: 1, H0370: 1, H0491: 1, H0318: 1, H0566: 1, H0551: 1, T0004: 1, L0435: 1, L0769: 1, L4747: 1, L5566: 1, L0772: 1, L0644: 1, L0764: 1, L0773: 1, L0774: 1, L0775: 1, L0806: 1, L0807: 1, L0659: 1, L0809: 1, L0665: 1, L0743: 1, L0747: 1, L0756: 1, L0777: 1, L0759: 1 and L0601: 1.		
					Val-18 to Glu-33.	H0659: 2 and L0777: 2.	
HPCOR06	933678	117	147 - 281	2292			
HTFNO06	933989	118	2 - 562	2293		L0794: 11, L0511: 11, L0748: 10, L0747: 8, L0499: 6, L0805: 6, L0509: 6, L0507: 5, L0502: 5, L0500: 5, L0766: 5, L0803: 5, L0508: 5, L0809: 5, L0751: 5, L0750: 5, L0752: 5, L0764: 4, L0662: 4, L0649: 4, L0493: 4, L0514: 4, H0670: 4, L0779: 4, H0445: 4, H0657: 3, H0036: 3, S0422: 3,	

		L0504: 3, L0768: 3, L0510: 3, L0789: 3, H0659: 3, L0439: 3, L0745: 3, L0749: 3, H0656: 2, S0442: 2, S0358: 2, S0444: 2, S0360: 2, H0580: 2, H0549: 2, H0486: 2, H0687: 2, H0328: 2, S0438: 2, L0505: 2, L0775: 2, L0657: 2, L0515: 2, L0518: 2, H0658: 2, H0651: 2, S0380: 2, H0696: 2, S0406: 2, H0436: 2, L0777: 2, L0755: 2, L0758: 2, L0759: 2, L0588: 2, L0605: 2, H0423: 2, S0412: 2, S0424: 2, H0686: 1, S0116: 1, S0212: 1, H0254: 1, H0255: 1, S0418: 1, S0476: 1, S6022: 1, H0431: 1, H0497: 1, H0333: 1, T0114: 1, H0635: 1, H0421: 1, H0204: 1, H0150: 1, H0081: 1, H0047: 1, H0023: 1, H0083: 1, H0615: 1,			

					H0039: 1, H0674: 1, L0455: 1, H0087: 1, H0059: 1, T0041: 1, T0042: 1, H0494: 1, H0509: 1, H0646: 1, S0002: 1, L0800: 1, L0644: 1, L0533: 1, L0804: 1, L0650: 1, L0774: 1, L0806: 1, L0655: 1, L0661: 1, L0659: 1, L0782: 1, L0519: 1, L0793: 1, L0664: 1, H0144: 1, L0438: 1, H0520: 1, H0547: 1, H0711: 1, H0660: 1, S0152: 1, S0032: 1, L0754: 1, L0731: 1, L0757: 1, L0592: 1, S0194: 1, H0543: 1, H0422: 1, L0600: 1 and H0352: 1.		
HODFY08	935520	119	130 - 339	2294	Arg-40 to Gln-45.	L0803: 4, H0615: 2, S6028: 1, L0521: 1, L0662: 1, L0794: 1 and L0756: 1.		
HRACK27	935717	120	3 - 1283	2295	Lys-121 to Arg-127.	H0039: 3, L0794: 2, H0650: 1, S0212: 1, S0358: 1, H0441: 1, H0587: 1, S0003: 1, H0494: 1, H0529: 1,		

					L0766: 1, H0690: 1, H0539: 1, H0696: 1, H0555: 1, L0439: 1, L0779: 1 and S0242: 1.			
HRACW30	940639	121	7 - 786	2296	S0358: 250, H0087: 131, S0376: 112, L0751: 93, H0445: 88, H0506: 87, L0599: 69, S0360: 67, H0672: 63, S0328: 63, S0116: 56, S0374: 55, H0597: 47, L0767: 47, L0744: 45, H0555: 44, H0486: 43, H0581: 35, H0040: 29, L0536: 29, L0535: 28, L0659: 26, H0658: 26, L0378: 24, L0546: 24, L0743: 24, H0255: 23, L0768: 23, H0264: 21, H0231: 20, H0085: 18, H0659: 18, L0607: 17, H0063: 16, S0330: 16, H0657: 15, L0785: 15, S0354: 15, H0647: 15, L0762: 15, S0372: 13, L0776: 13, H0421: 12, L0379: 11, S0446: 11, L0600: 11, L0663: 10, L0748: 10, H0595: 10, L0372: 9, L0648: 9, H0663: 8,	2p12	147200, 178640, 216900

		H0156: 8, H0108: 8, H0039: 8, H0622: 8, L0775: 8, L0375: 8, S0430: 7, H0254: 7, H0252: 7, H0090: 7, H0272: 7, L0655: 7, L0538: 7, L0754: 7, H0444: 7, H0004: 6, H0234: 6, H0188: 6, H0488: 6, L0523: 6, L0664: 6, H0656: 5, L0808: 5, H0662: 5, H0274: 5, H0251: 5, H0235: 5, L0646: 5, L0662: 5, L0526: 5, S0462: 5, H0677: 5, S0384: 5, H0664: 4, H0590: 4, H0591: 4, H0634: 4, H0646: 4, L0763: 4, L0770: 4, S0380: 4, S0432: 4, L0581: 4, H0650: 3, S0356: 3, S0408: 3, H0042: 3, L0774: 3, L0547: 3, L0783: 3, H0684: 3, S0404: 3, L0777: 3, S0434: 3, H0671: 2, S0442: 2, S0444: 2, H0489: 2, H0485: 2, H0427: 2,			

		H0575: 2, H0037: 2, T0071: 2, H0204: 2, H0232: 2, H0050: 2, H0015: 2, H0271: 2, H0068: 2, S0382: 2, S0464: 2, H0538: 2, L0369: 2, L0627: 2, L0387: 2, L0633: 2, L0657: 2, L0518: 2, L0666: 2, L0665: 2, S0378: 2, L0758: 2, H0343: 2, S0458: 2, UNKWN: 2, H0352: 2, H0186: 1, H0583: 1, L0760: 1, H0125: 1, H0676: 1, H0619: 1, H0549: 1, H0101: 1, H0635: 1, L0021: 1, H0025: 1, H0120: 1, S0182: 1, H0596: 1, H0054: 1, H0086: 1, H0045: 1, H0350: 1, H0014: 1, H0510: 1, H0375: 1, T0023: 1, H0111: 1, H0383: 1, H0113: 1, H0376: 1, H0477: 1, H0487: 1, H0059: 1, T0004: 1, H0396: 1, S0352: 1, S0370: 1, H0641: 1,			

						S0472: 1, H0652: 1, S0326: 1, H0517: 1, L0764: 1, L0765: 1, L0773: 1, L0766: 1, L0499: 1, L0376: 1, L0806: 1, L0527: 1, L0517: 1, L0542: 1, L0384: 1, L0529: 1, H0666: 1, H0579: 1, S0350: 1, H0134: 1, H0214: 1, S0406: 1, H0576: 1, H0478: 1, S0322: 1, L0747: 1, L0779: 1, L0780: 1, L0755: 1, S0394: 1, S0011: 1 and S0456: 1.		118504, 118504, 131242, 256540, 600281, 600281, 602235
HOFOC32	941969	122	3 - 1502	2297	Thr-1 to Pro-6, Pro-57 to Thr-63, Arg-110 to Asp-115, Lys-147 to Pro-152, Met-221 to Cys-228, Tyr-254 to Cys-261, Lys-286 to Gly-295, Thr-315 to Gly-325, Ala-351 to Ser-356, Ile-380 to Gln-387, Gly-409 to Arg-419, Val-421 to Val-428.	AR053: 15, AR089: 14, AR033: 10, AR039: 9, AR096: 9, AR060: 9, AR055: 8, AR104: 7, AR061: 6 H0415: 1, H0438: 1, H0486: 1, H0581: 1, S0250: 1, H0616: 1, H0494: 1 and L0659: 1.	20q13.1-13.3		
HTTDM15	942511	123	2 - 670	2298	Glu-181 to Pro-189, Lys-211 to Arg-217.	AR052: 12, AR055: 11, AR053: 10, AR089:			

						9, AR033: 8, AR096: 8, AR060: 8, AR061: 7, AR104: 5, AR039: 5 L0748: 4, H0441: 2, H0333: 2, H0670: 2, H0660: 2, L0439: 2, L0747: 2, L0601: 2, S0218: 1, H0650: 1, H0656: 1, H0254: 1, H0255: 1, H0013: 1, H0327: 1, H0266: 1, H0070: 1, H0040: 1, T0042: 1, L0809: 1, L0790: 1, L0792: 1, H0689: 1, H0435: 1, H0134: 1, L0741: 1, L0759: 1 and S0042: 1.		
HOVAY63	944031	124	589 - 449	2299	Lys-30 to His-47.	AR039: 13, AR104: 7, AR053: 6, AR089: 6, AR096: 6, AR052: 5, AR060: 5, AR033: 4, AR055: 4, AR061: 3 H0428: 3, H0545: 1 and L0754: 1.		
HDPFY41	946502	125	597 - 2024	2300	Trp-2 to Ile-8, Cys-31 to Asp-39, Glu-54 to Ser-61, Gln-63 to Lys-70, Arg-79 to Arg-85,	AR089: 19, AR096: 18, AR039: 11, AR053: 7, AR060: 6, AR055: 2, AR033: 1, AR061: 1, AR104: 1, AR052:		

					Ser-134 to His-143, Asn-145 to Thr-150, Ser-155 to Thr-168, Asp-198 to His-203, Phe-205 to Asp-234, Pro-238 to Asn-252, Phe-260 to Val-281, Pro-292 to Leu-314, Thr-317 to Ala-322, Lys-335 to His-342.	0 L0439: 4, L0756: 4, H0616: 3, L0766: 3, H0662: 2, L0803: 3, L0777: 3, H0428: 2, L0665: 2, H0547: 2, L0602: 2, L0779: 2, L0731: 2, H0624: 1, S6024: 1, S0114: 1, H0661: 1, S0356: 1, L0717: 1, H0409: 1, H0486: 1, S0003: 1, H0615: 1, S0036: 1, H0163: 1, S0426: 1, L0662: 1, L0649: 1, L0650: 1, L0375: 1, L0806: 1, L0655: 1, L0661: 1, L0659: 1, L0791: 1, L0792: 1, L0666: 1, H0144: 1, H0658: 1, H0672: 1, S0152: 1, H0521: 1, L0754: 1, L0759: 1, L0591: 1, S0011: 1 and H0008: 1.		
HCOPB92	948608	126	99 - 260	2301	Tyr-37 to Ser-47.	H0670: 2			
HBJHO83	948708	127	171 - 389	2302	His-1 to Phe-8.	H0318: 1, H0150: 1 and L0385: 1.			
HWMEO44	948719	128	3 - 1343	2303	Met-1 to Leu-7, Ile-21 to Gln-33,	H0622: 2, H0422: 2, S0358: 1, H0497: 1,			

HFXJA96	949001	129	1 - 240	2304	Pro-48 to Glu-53, His-66 to Asn-71, Asp-107 to Glu-118, Val-122 to Leu-133, Gly-185 to Gly-194, Thr-249 to Ser-258, Lys-310 to Lys-328, Arg-367 to Phe-375, Ser-377 to Ala-382, Gln-389 to Trp-395.	H0039: 1, H0056: 1, L0662: 1, H0666: 1, L0596: 1 and S0242: 1.		
						AR039: 36, AR052: 33, AR053: 19, AR104: 18, AR096: 17, AR033: 15, AR089: 13, AR061: 11, AR055: 11, AR060: 9 L0749: 3, L0757: 3, H0169: 2, L0769: 2, L0805: 2, L0754: 2, L0759: 2, H0685: 1, S0282: 1, L0717: 1, H0428: 1, H0068: 1, S0422: 1, L0648: 1, L0521: 1, L0794: 1, L0803: 1, L0776: 1, L0656: 1, L0809: 1, L0790: 1, L0665: 1, S0148: 1, L0438: 1, H0659: 1, H0648: 1, L0748: 1, L0747: 1,		

HTLGV19	949574	130	3 - 758	2305	Tyr-10 to Gly-19, Pro-55 to Lys-72, Glu-89 to Ala-95, Asp-107 to Gly-113, Arg-140 to Thr-149.	L0750: 1, L0752: 1, H0543: 1 and S0412: 1.			
						AR061: 4, AR096: 3, AR089: 3, AR055: 3, AR060: 2, AR104: 2, AR039: 2, AR033: 1, AR053: 1 H0555: 2, S0040: 1, S0444: 1, H0619: 1, H0618: 1, H0620: 1, H0284: 1 and H0063: 1.			
HMSAC18	950257	131	1214 - 297	2306		AR052: 11, AR089: 5, AR053: 5, AR096: 4, AR060: 4, AR061: 4, AR039: 4, AR033: 3, AR055: 3, AR104: 3 S0007: 3, L0758: 3, S0382: 2, L0805: 2, L0776: 2, H0666: 2, L0748: 2, S6024: 1, H0341: 1, H0331: 1, H0628: 1, H0038: 1, S0002: 1, L0770: 1, L0662: 1, L0766: 1, L0522: 1, L0659: 1, L0663: 1, H0519: 1, H0659: 1, L0602: 1, L0754: 1, L0749: 1, L0779: 1 and L0731: 1.			
HAPRB43	950475	132	3 - 536	2307	Phe-25 to Lys-31,	AR060: 10, AR055: 6,			

					Pro-60 to Lys-82, Tyr-122 to Asp-131, Lys-137 to Leu-144.	AR096: 6, AR061: 5, AR089: 4, AR033: 3, AR104: 3, AR052: 3, AR039: 3, AR053: 3 L0595: 7, L0803: 4, L0599: 4, S0356: 2, H0652: 2, L0771: 2, L0756: 2, L0779: 2, S0376: 1, H0486: 1, H0013: 1, H0575: 1, H0024: 1, H0356: 1, H0328: 1, L0369: 1, L0642: 1, L0794: 1, L0804: 1, L0809: 1, L0663: 1, L0665: 1, H0670: 1, H0648: 1, S0330: 1, L0752: 1, S0434: 1 and H0506: 1.		
HCCMD55	956895	133	199 - 17	2308	Gln-7 to Lys-23, Gln-49 to Glu-54.	AR055: 3, AR089: 3, AR053: 2, AR060: 2, AR039: 2, AR061: 1, AR033: 1, AR096: 1, AR104: 1, AR052: 0 S0358: 13, H0617: 8, S0444: 4, S0408: 2, S0374: 2, H0484: 1, S0376: 1, S0360: 1, S0410: 1, H0618: 1, H0231: 1, H0615: 1, S0368: 1, H0606: 1,		

						S0438: 1, H0647: 1, L0762: 1, L0772: 1, L0764: 1, L0376: 1, L0493: 1, L0783: 1, L0530: 1, H0659: 1, H0670: 1, H0648: 1, H0672: 1 and L0758: 1.		
HKBAL08	958219	134	108 - 1	2309	Leu-28 to Phe-35.			
HKADF15	960658	135	1 - 1551	2310	Ala-3 to Gly-12, Gly-23 to Ser-46, Arg-91 to Gly-97, Val-105 to Ala-116, Ser-173 to His-180, Gly-190 to Tyr-206, Lys-280 to Lys-285, Arg-347 to Asp-352, Glu-403 to Lys-410, Ser-430 to Phe-442.	L0747: 24, L0754: 18, H0309: 12, H0545: 12, H0031: 12, L0439: 11, H0428: 10, L0755: 10, H0251: 9, S0126: 9, L0744: 8, L0757: 8, L0588: 8, S0360: 7, S0010: 7, S0051: 7, H0252: 7, H0135: 7, L0361: 7, S0212: 6, H0544: 6, H0687: 6, H0494: 6, L0438: 6, H0658: 6, L0748: 6, L0752: 6, L0591: 6, H0662: 5, L0731: 5, L0759: 5, S0192: 5, S0040: 4, S0222: 4, H0081: 4, H0024: 4, H0644: 4, H0124: 4, H0551: 4, L0662: 4, L0659: 4, L0565: 4, L0751: 4, L0750: 4,	10q25.3-q26.2	263700, 601969, 601969

		L0599: 4, S0194: 4, H0486: 3, H0013: 3, T0006: 3, H0628: 3, H0316: 3, H0163: 3, L0770: 3, L0768: 3, L0775: 3, L0809: 3, H0670: 3, H0672: 3, L0603: 3, S0356: 2, S0358: 2, S0046: 2, H0455: 2, H0586: 2, H0587: 2, H0575: 2, H0318: 2, H0123: 2, H0012: 2, H0188: 2, S0250: 2, S0003: 2, S0214: 2, T0023: 2, H0553: 2, T0067: 2, L0351: 2, L0763: 2, L0771: 2, L0774: 2, L0651: 2, L0783: 2, L0666: 2, H0689: 2, H0660: 2, H0651: 2, S0330: 2, S0378: 2, S0206: 2, L0749: 2, S0031: 2, L0590: 2, L0601: 2, H0624: 1, S0342: 1, S0180: 1, S0400: 1, L0005: 1, S0376: 1, H0619: 1, H0645: 1, S0300: 1, L0717: 1, H0406: 1,				

		H0437: 1, H0261: 1, H0550: 1, S6014: 1, S0220: 1, H0441: 1, H0431: 1, H0432: 1, H0370: 1, H0592. 1, H0632: 1, T0039: 1, H0427: 1, H0156: 1, L0021: 1, H0098: 1, H0706: 1, S0346: 1, S0049: 1, H0196: 1, H0235: 1, L0738: 1, H0327: 1, H0546: 1, H0046: 1, L0041: 1, H0172: 1, H0566: 1, H0050: 1, H0049: 1, H0620: 1, H0373: 1, H0051: 1, S0388: 1, T0010: 1, H0355: 1, H0510: 1, H0266: 1, S0318: 1, H0028: 1, H0039: 1, L0142: 1, H0606: 1, H0032: 1, S0366: 1, S0038: 1, L0564: 1, S0448: 1, H0509: 1, H0647: 1, L0369: 1, L0640: 1, L0631: 1, L0500: 1, L0769: 1, L0372: 1, L0641: 1, L0773: 1, L0648: 1, L0650: 1,			

					L0806: 1, L0655: 1, L0657: 1, L0547: 1, L0647: 1, L0788: 1, L0793: 1, L0663: 1, L0664: 1, H0693: 1, H0648: 1, H0704: 1, H0555: 1, S0037: 1, S3014: 1, S0028: 1, L0743: 1, L0740: 1, L0779: 1, L0780: 1, S0260: 1, H0343: 1, L0605: 1, L0366: 1, H0653: 1, H0667: 1, L0096: 1, S0196: 1 and H0506: 1.		
HOGES55	961337	136	107 - 1483	2311	Ser-14 to Ser-23, His-30 to Ser-45, Gly-55 to Arg-67, Leu-71 to Leu-76, Leu-97 to Glu-102, Ser-118 to Pro-129, Pro-159 to Ala-179, Leu-189 to Ser-204.	L0803: 4, L0663: 3, S0420: 2, L0666: 2, H0435: 2, L0748: 2, L0777: 2, S0116: 1, S0132: 1, H0370: 1, L0021: 1, S0422: 1, L0664: 1, H0658: 1, S0328: 1, L0749: 1, S0436: 1 and L0097: 1.		
HKZAJ14	961458	137	135 - 1028	2312	Asn-4 to Lys-9, Arg-37 to Pro-42, Pro-79 to Ile-91, Asp-144 to Trp-155, Asp-189 to Gln-194, Ser-199 to Ser-204,	L0777: 3, L0754: 2, H0689: 1, H0660: 1 and L0755: 1.		

					Leu-208 to Asn-214, Leu-225 to Leu-230, Thr-234 to Lys-245, Asn-251 to Leu-260, Glu-285 to Asp-290.			
HLHAE14	962362	138	1915 - 1826	2313	Gly-15 to Glu-26.	L0748: 2, L0749: 2, H0024: 1 and H0051: 1.		
HBCJN16	965190	139	2 - 346	2314	Pro-15 to Arg-20, Leu-31 to Asp-36, Gly-50 to Glu-65, Phe-74 to Gly-81.			
HCGAF29	965372	140	2 - 1660	2315	Ser-1 to Gly-9, Ile-50 to Thr-55.	H0449: 1, H0393: 1, H0691: 1, H0547: 1 and H0711: 1.	1p12-p13	102770, 188540, 600234, 601414, 601691, 601691, 601691, 601691, 601718, 602094
HAHEF81	967634	141	716 - 339	2316		L0774: 3, L0809: 2, H0483: 1, H0306: 1, H0599: 1, H0618: 1, H0083: 1, H0644: 1, H0617: 1, H0606: 1, H0087: 1, L0369: 1, L0763: 1, L0643: 1, L0662: 1, L0794: 1, L0804: 1, L0790: 1,		

							L0665: 1, H0658: 1, H0696: 1, L0748: 1, L0780: 1 and L0757: 1.		
HBJAB02	967807	142	2 - 1267	2317	Val-35 to Leu-44, Gln-60 to Arg-67, Glu-72 to Asn-84, Glu-131 to Cys-152, Tyr-162 to Gly-175, Gly-184 to Gly-189, Ser-191 to Gly-223, Asp-261 to Arg-266, Asn-270 to Glu-275, Gln-282 to His-287, Tyr-302 to Asn-310, Lys-321 to Arg-327, Lys-330 to Ala-339, Lys-385 to Gly-391, Arg-402 to Lys-422.	L0794: 3, H0255: 2, H0318: 2, H0251: 2, L0764: 2, L0628: 2, L0665: 2, H0658: 2, L0361: 2, H0265: 1, H0685: 1, H0657: 1, H0483: 1, S0420: 1, S0358: 1, S0132: 1, S0222: 1, T0082: 1, H0150: 1, H0083: 1, S0214: 1, H0252: 1, H0628: 1, T0041: 1, S0344: 1, H0529: 1, L0520: 1, L0535: 1, L0662: 1, L0387: 1, L0375: 1, L0518: 1, L0666: 1, L0663: 1, H0519: 1, H0670: 1, H0660: 1, L0747: 1, L0777: 1, L0601: 1, S0276: 1, H0423: 1 and H0422: 1.	5q23.3-q31.2	121050, 131400, 153455, 159000, 179095, 180071, 181460, 192974, 192974, 600807, 601596, 602089
HOUCR01	968171	143	2 - 994	2318	Leu-98 to Cys-107, Ala-135 to Ala-142, Pro-233 to Lys-238, Gln-246 to Ala-257, Ser-294 to His-302.	AR033: 7, AR104: 7, AR055: 4, AR060: 3, AR096: 3, AR089: 3, AR061: 3, AR053: 2, AR052: 2, AR039: 1			

					L0742: 4, S0007: 3, L0439: 3, S0040: 2, H0009: 2, L0769: 2, L5566: 2, L0764: 2, L0740: 2, L0758: 2, S0110: 1, S0010: 1, H0390: 1, S0049: 1, L0157: 1, H0563: 1, H0570: 1, H0123: 1, H0024: 1, H0252: 1, H0615: 1, H0617: 1, H0040: 1, H0509: 1, L0763: 1, L0794: 1, H0144: 1, H0691: 1, L0438: 1, H0547: 1, H0658: 1, H0539: 1, H0696: 1, H0555: 1, L0748: 1, L0750: 1 and L0777: 1.	2q32.1	600258, 602087
HDTIG18	968454	144	334 - 1011	2319	Arg-1 to Gly-8, Pro-10 to Ser-72, Thr-80 to Gln-86, Pro-96 to Ala-102, Ser-137 to Val-146, Leu-207 to Asp-214, Gln-219 to Thr-226.	L0766: 2, L0776: 2, L0438: 2, S0114: 1, S0007: 1, H0393: 1, S0222: 1, H0486: 1, H0009: 1, H0012: 1, H0014: 1, H0083: 1, H0687: 1, S0003: 1, H0628: 1, T0067: 1, H0100: 1, S0344: 1, H0521: 1, S0032: 1, L0748: 1, L0740: 1,		

						L0745: 1, L0746: 1, L0750: 1, L0779: 1, L0752: 1, L0753: 1, L0755: 1, L0757: 1, S0026: 1, S0276: 1 and H0543: 1.		
HBLGD30	968949	145	3951 - 1765	2320	Glu-20 to Lys-33, Ser-96 to His-109, Asn-147 to Val-166, Glu-188 to Ala-194, Ala-231 to Lys-240, Ala-267 to Lys-283, Met-291 to Gly-297, Arg-332 to Thr-338, Thr-365 to Tyr-377, Gln-381 to Ser-389, Glu-406 to Lys-417, Arg-462 to Glu-467, Ile-525 to Asp-535, Leu-595 to Glu-615, Phe-667 to Tyr-675, Gln-722 to Gly-729.	H0574: 6, L0362: 6, H0510: 5, L0666: 5, L0665: 4, S0358: 3, H0670: 3, H0013: 2, H0421: 2, H0046: 2, S0438: 2, L0775: 2, L0746: 2, L0756: 2, L0581: 2, H0431: 1, H0004: 1, H0014: 1, H0015: 1, S0338: 1, S0003: 1, L0456: 1, S0440: 1, L0770: 1, L0803: 1, L0525: 1, L0607: 1, L0664: 1, H0593: 1, H0683: 1, H0658: 1, L0755: 1 and S0276: 1.	3q23-q25	106165, 110100, 117700, 117700, 150210, 169600, 180380, 180380, 180380, 203500, 222900, 276902, 601199, 601199, 601199, 601682
HFIHK04	969387	146	580 - 825	2321	Pro-16 to Pro-21, Ser-33 to Gly-38.	L0747: 5, H0318: 3, H0617: 3, L0749: 3, L0776: 2, H0483: 1, H0615: 1, H0039: 1, L0055: 1, L0769: 1, L0521: 1, L0766: 1, L0375: 1, L0809: 1,		

						H0520: 1, H0689: 1, H0672: 1, S0152: 1, L0750: 1, L0608: 1 and S0194: 1.		
HODIL24	969841	147	7 - 798	2322		H0615: 6, L0766: 3, L0779: 2, L0777: 2, H0556: 1, S0222: 1, H0438: 1, H0492: 1, H0013: 1, H0156: 1, H0052: 1, H0561: 1, S0440: 1, S0150: 1, H0538: 1, L0369: 1, L0371: 1, L0769: 1, L0805: 1, L0659: 1, L0647: 1, S0374: 1, H0518: 1, S0152: 1, L0740: 1, L0756: 1, L0755: 1, L0731: 1, H0445: 1, S0026: 1 and H0653: 1.		
HE8NQ16	970046	148	2 - 1105	2323		L0439: 6, L0756: 5, L0779: 5, L0777: 5, L0759: 5, L0776: 4, H0620: 3, L0747: 3, L0755: 3, S0442: 2, S0358: 2, H0615: 2, L0770: 2, L0768: 2, H0144: 2, S0374: 2, L0748: 2, L0740: 2, L0745: 2, L0750: 2,		

HOFMS34	973010	149	27 - 1019	2324	Gly-9 to Gln-19, Pro-36 to Gly-41, Ala-112 to Ala-123, Asp-151 to Arg-157, Ala-199 to Asp-211.	L0599: 2, S0134: 1, S0222: 1, H0642: 1, H0013: 1, H0156: 1, S0010: 1, H0052: 1, H0596: 1, H0083: 1, S6028: 1, H0687: 1, S0250: 1, S0003: 1, S0214: 1, H0428: 1, H0622: 1, H0644: 1, H0038: 1, H0269: 1, T0042: 1, H0646: 1, L0369: 1, L0762: 1, L0796: 1, L0800: 1, L0662: 1, L0794: 1, L0774: 1, L0775: 1, L0659: 1, L0783: 1, L0793: 1, H0683: 1, H0435: 1, H0648: 1, H0672: 1, S0328: 1, H0539: 1, S0380: 1, H0696: 1, S0044: 1, H0631: 1, L0749: 1, L0753: 1, L0757: 1, S0434: 1 and L0485: 1.	AR053: 2, AR033: 2, AR089: 2, AR060: 2, AR096: 2, AR052: 1, AR061: 1, AR055: 1, AR039: 1, AR104: 0 H0415: 5		

HOFOB11	973505	150	3 - 293	2325	Pro-70 to Cys-76.	AR096: 11, AR089: 6, AR053: 6, AR060: 5, AR104: 5, AR033: 3, AR039: 3, AR055: 2, AR061: 1 H0415: 2	1p31	180069, 180069, 180069, 201450, 248610, 600309, 601676, 602522
HTLHN94	974667	151	306 - 812	2326	His-8 to Gly-18.	AR039: 26, AR055: 18, AR033: 15, AR053: 14, AR052: 13, AR089: 12, AR060: 11, AR104: 11, AR096: 10, AR061: 8 H0521: 185, H0522: 75, H0046: 37, S0360: 25, H0580: 24, H0585: 22, H0575: 22, L0599: 21, H0657: 16, H0255: 15, H0486: 15, L0664: 15, H0641: 14, S0376: 12, H0581: 12, L0751: 12, H0650: 11, H0087: 10, S0002: 10, H0638: 9, H0264: 9, H0509: 9, L0769: 9, H0445: 9, H0656: 8, S0358: 8, H0617: 8, L0748: 8, L0750: 8, L0659: 7, H0658: 7, H0672: 7,		

		H0134: 7, H0555: 7, S0031: 7, H0586: 6, H0318: 6, H0031: 6, H0040: 6, H0561: 6, S0344: 6, L0372: 6, H0682: 6, L0731: 6, H0560: 5, L0657: 5, S0328: 5, L0752: 5, S0116: 4, H0550: 4, H0036: 4, L0375: 4, L0806: 4, L0776: 4, L0666: 4, H0648: 4, L0755: 4, L0758: 4, H0506: 4, S0354: 3, H0250: 3, H0069: 3, H0427: 3, H0597: 3, H0271: 3, H0090: 3, H0272: 3, L0662: 3, L0794: 3, L0766: 3, L0651: 3, L0540: 3, L0546: 3, L0665: 3, S0330: 3, L0743: 3, L0362: 3, H0265: 2, T0002: 2, H0141: 2, H0341: 2, H0671: 2, H0402: 2, H0637: 2, S0132: 2, H0574: 2, S0280: 2, H0156: 2, H0042: 2, H0618: 2, H0309: 2, H0050: 2,				

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						H0518: 1, H0479: 1, L0756: 1, L0779: 1, L0780: 1, H0343: 1, H0595: 1, L0588: 1, L0604: 1, L0697: 1, S0384: 1 and L0600: 1.		
HLDRT31	975754	152	37 - 585	2327		AR061: 16, AR060: 7, AR039: 5, AR089: 4, AR096: 3, AR104: 2, AR033: 1, AR055: 1, AR053: 1 H0199: 2, H0246: 2, H0197: 1, H0510: 1 and H0144: 1.		
HWLHW86	975771	153	5 - 1186	2328	Ser-1 to Gly-16, Pro-26 to Gly-31, Thr-40 to Gln-46, Pro-59 to Ser-66, Pro-69 to Ser-80, Val-120 to Cys-126, Lys-157 to Gly-166, Gln-169 to Tyr-175, Arg-205 to Glu-212, His-230 to Leu-242, Gln-277 to Asn-285.	AR060: 12, AR039: 8, AR089: 7, AR096: 1, AR061: 1, AR033: 0, AR053: 0, AR055: 0 S0408: 32, S0444: 21, S0442: 20, S0360: 20, L0665: 19, S0406: 18, S0436: 18, S0358: 17, L0666: 17, S0440: 15, L0752: 13, L0663: 11, S0376: 10, S0374: 10, L0662: 9, L0646: 8, H0672: 8, L0596: 8, L0601: 8, S0354: 6, L0664: 6, H0648: 6, L0777: 6, L0774: 5,	4q	

		S0404: 5, S0356: 4, L0771: 4, L0657: 4, H0659: 4, L0372: 3, L0522: 3, L0776: 3, L0659: 3, H0658: 3, H0696: 3, L0750: 3, L0779: 3, L0608: 3, H0615: 2, H0428: 2, H0169: 2, H0090: 2, H0059: 2, H0646: 2, L0640: 2, L0764: 2, L2269: 2, H0593: 2, H0670: 2, L0754: 2, L0759: 2, S0434: 2, L0599: 2, L0362: 2, H0506: 2, H0624: 1, H0686: 1, L0778: 1, H0661: 1, H0662: 1, H0489: 1, H0409: 1, H0592: 1, T0060: 1, H0575: 1, H0590: 1, H0596: 1, L0040: 1, H0597: 1, H0046: 1, H0012: 1, H0620: 1, H0014: 1, S6028: 1, H0328: 1, H0039: 1, H0622: 1, L0483: 1, H0494: 1, H0647: 1, H0538: 1, L0502: 1, L0763: 1, L0373: 1,				

						L0644: 1, L0803: 1, L0650: 1, L0775: 1, L0805: 1, L0634: 1, L0636: 1, L0782: 1, L0809: 1, H0547: 1, H0689: 1, H0682: 1, H0683: 1, H0435: 1, H0660: 1, S0328: 1, S0378: 1, H0704: 1, L0758: 1, H0707: 1, S0026: 1 and S0460: 1.		
HOFNM53	976051	154	3 - 1589	2329	Val-9 to Glu-22, Leu-48 to Gln-53, Ser-64 to Asn-74, Pro-76 to Arg-83, Thr-118 to Gly-126.	AR104: 6, AR053: 5, AR089: 5, AR033: 5, AR039: 4, AR055: 4, AR060: 4, AR096: 3, AR061: 1, AR052: 0 H0415: 4			
HDPSE86	976207	155	1 - 1344	2330	Pro-30 to Thr-35, Ala-81 to Pro-86, Gly-140 to Thr-151, Ala-157 to Gly-162, Arg-195 to Val-209, Arg-236 to Ser-245.	AR053: 17, AR089: 16, AR033: 12, AR060: 12, AR039: 12, AR096: 10, AR104: 9, AR055: 9, AR061: 7 H0424: 2, H0689: 2, H0318: 1, S0036: 1, L0665: 1, H0684: 1, H0521: 1 and H0555: 1.	12q23-q24	113100, 124200, 147440, 158590, 160781, 163950, 163950, 235800, 251170, 276710, 600175, 601517	
HHFOE18	976216	156	1 - 1275	2331	Thr-1 to Thr-33.	L0659: 7, H0486: 4,			

					L0748: 4, L0747: 4, H0328: 3, L0800: 3, H0050: 2, H0135: 2, H0059: 2, L0771: 2, L0790: 2, L0750: 2, L0777: 2, L0759: 2, H0624: 1, H0170: 1, H0717: 1, H0663: 1, L0005: 1, H0619: 1, H0645: 1, H0455: 1, H0013: 1, S0010: 1, S6028: 1, H0039: 1, H0031: 1, H0598: 1, H0102: 1, L0598: 1, L0763: 1, L0761: 1, L0803: 1, L0791: 1, L0666: 1, L0565: 1, S0126: 1 and L0749: 1.	12q23-q24.1	124200, 147440, 160781, 181405, 235800, 261600, 261600, 600175, 601406, 601620, 601621
HHFNH27	976968	157	11 - 604	2332	Asp-1 to Ser-12, Glu-15 to Ala-29, Glu-40 to Lys-56, Ile-131 to Asp-150, Leu-177 to Asp-183.	AR052: 169, AR096: 135, AR053: 92, AR089: 91, AR060: 83, AR033: 59, AR104: 54, AR039: 40, AR061: 37, AR055: 29 H0341: 9, H0657: 7, S0358: 4, H0251: 4, H0428: 4, L0748: 4, L0750: 4, H0445: 4, S0116: 3, H0333: 3, H0318: 3, T0041: 3,			

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HMMBZ81	977264	158	551 - 357	2333		H0444: 1		
HSLGF32	977704	159	2 - 301	2334	Arg-1 to Arg-45, Glu-47 to Arg-77, Asp-79 to Ser-100.	L0748: 6, L0777: 4, H0685: 2, L0599: 2, H0575: 1, S0010: 1, H0421: 1, H0169: 1, H0264: 1, H0413: 1, L0769: 1, L0646: 1, L0803: 1, L0653: 1, L0776: 1, L0792: 1, H0659: 1, H0658: 1, S3014: 1, S0028: 1, L0751: 1 and L0779: 1.		
HEEAH23	978593	160	1 - 123	2335		H0549: 1, S0222: 1, H0266: 1, H0428: 1 and S0370: 1.		
HODFU73	978812	161	179 - 652	2336	Gly-85 to His-97, Gly-125 to Gly-130.	L0519: 5, L0756: 5, L0731: 5, L0665: 4, L0717: 3, S0474: 3, L0794: 3, L0663: 3, H0547: 3, H0682: 3,	2p14-p13	203800, 602404

					H0660: 3, H0615: 2, H0551: 2, L0650: 2, L0805: 2, L0659: 2, L0809: 2, L0666: 2, L0439: 2, L0740: 2, L0745: 2, L0750: 2, H0352: 2, H0411: 1, H0431: 1, H0590: 1, L0738: 1, H0015: 1, H0071: 1, S6028: 1, H0328: 1, H0688: 1, H0039: 1, H0622: 1, H0591: 1, H0264: 1, S0422: 1, L0638: 1, L0662: 1, L0803: 1, L0375: 1, L0657: 1, L0791: 1, L0664: 1, H0144: 1, L0352: 1, H0690: 1, H0658: 1, H0670: 1, H0666: 1, L0754: 1, L0746: 1, L0777: 1, L0755: 1 and S0412: 1.		
HNBUA49	978998	162	1399 - 353	2337	L0754: 3, L0591: 3, H0659: 2, L0748: 2, H0663: 1, H0662: 1, S0354: 1, S0376: 1, L0021: 1, S6028: 1, H0616: 1, T0067: 1, S0422: 1, L0520: 1,		

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HVVDU73	979346	163	2 - 1603	2338	Val-1 to Gly-7, Ala-10 to Ser-15, Ala-32 to Ala-75, Pro-93 to Asp-101, Arg-107 to Gln-117, Glu-133 to Ser-138, Ile-157 to Pro-170, Arg-181 to Glu-192, Ser-200 to Glu-209, Glu-239 to Val-249, Glu-287 to Glu-305, Ala-320 to Arg-328, Pro-363 to Arg-389, Lys-396 to Leu-406, Arg-433 to Gly-442, Ser-470 to Asn-481, Arg-498 to Ser-528.	H0046: 9, H0494: 6, S0358: 4, H0622: 2, H0662: 1, S0356: 1, H0549: 1, H0575: 1, H0081: 1, H0646: 1, L0761: 1, L0800: 1, H0672: 1, S0152: 1, H0521: 1, H0555: 1, L0748: 1, L0777: 1 and L0601: 1.	1q25.1-q32.3	145001, 145260, 150292, 208250, 600759, 600995, 601652, 601975
HHESX72	979468	164	136 - 480	2339	Tyr-28 to Ser-34, Leu-76 to Gln-83.	L0748: 3, S0380: 2, H0581: 1, H0477: 1, S0126: 1 and H0543: 1.		

HOCPY88	979547	165	136 - 939	2340	Arg-38 to Lys-44, Lys-65 to Pro-72, Pro-96 to Tyr-102, Val-117 to Tyr-124, Leu-140 to Gly-154, Pro-167 to Trp-174, Val-180 to Tyr-185, Pro-191 to Tyr-196, Pro-199 to Thr-204, Gln-238 to Ala-244, Val-255 to Val-262.	H0553: 2, H0519: 2, L0731: 2, S0192: 2, S0134: 1, H0306: 1, H0375: 1, H0292: 1, S0144: 1, L0794: 1, L0766: 1, L0775: 1, L0809: 1, H0144: 1, S0126: 1, H0660: 1, H0672: 1, H0521: 1 and S0260: 1.	2p13	203800, 602404
HOGDC64	979666	166	164 - 769	2341		H0521: 53, S0002: 17, L0809: 13, S0360: 12, H0522: 12, H0580: 11, L0766: 11, S0426: 10, S0278: 9, H0618: 9, L0758: 8, H0556: 7, H0581: 7, L0439: 7, L0731: 7, H0253: 6, H0038: 6, L0771: 6, L0794: 6, L0805: 6, L0518: 6, L0666: 6, L0748: 6, H0553: 5, L0764: 5, L0659: 5, L0779: 5, H0265: 4, H0650: 4, S0408: 4, S0344: 4, L0667: 4, L0776: 4, L0759: 4, L0596: 4, L0604: 4, L0362: 4, H0486: 3,	17q21-q23	106180, 109270, 109270, 109270, 109270, 109270, 113705, 113705, 138700, 139250, 144200, 148065, 148066, 148066, 148067, 148067, 148069, 148080, 150200,

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		H0586: 1, H0587: 1, H0497: 1, H0632: 1, H0257: 1, H0559: 1, H0427: 1, H0122: 1, S0182: 1, H0421: 1, H0309: 1, H0596: 1, H0597: 1, L0471: 1, H0012: 1, H0015: 1, S6028: 1, H0179: 1, H0271: 1, S0312: 1, H0622: 1, L0055: 1, H0708: 1, H0598: 1, S0036: 1, H0135: 1, H0040: 1, H0379: 1, T0041: 1, S0440: 1, H0633: 1, S0142: 1, L0369: 1, L0763: 1, L0631: 1, L0770: 1, L0769: 1, L0761: 1, L0800: 1, L0662: 1, L0364: 1, L0803: 1, L0775: 1, L0784: 1, L0378: 1, L0606: 1, L0527: 1, L0657: 1, L0558: 1, L0545: 1, L0789: 1, L0791: 1, L0663: 1, L0665: 1, H0699: 1, H0703: 1, S0374: 1, H0689: 1, H0684: 1, H0435: 1,			

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HSIEA14	980139	167	456 - 683	2342	Pro-46 to Lys-53.	AR039: 4, AR096: 1, AR053: 1, AR060: 1, AR089: 1, AR033: 1, AR061: 1, AR055: 0, AR104: 0 H0036: 1		
HSPSY43	980269	168	883 - 1659	2343	Leu-32 to Glu-41, Asn-67 to His-72, Glu-96 to Thr-105, Phe-122 to Leu-130, Glu-151 to Glu-157, Val-165 to Gly-171, Arg-185 to Ile-196, Ser-205 to Leu-216, Leu-220 to Ala-225, Tyr-235 to Leu-243.	L0439: 17, H0013: 16, T0010: 13, S0010: 10, H0052: 10, L0754: 10, S0222: 9, L0743: 8, S0001: 7, H0644: 6, H0144: 6, L0662: 5, L0659: 5, H0547: 5, H0658: 5, L0742: 5, L0591: 5, H0657: 4, S0007: 4, H0441: 4, L0351: 4, S0344: 4, L0741: 4, S0046: 3, H0351: 3, H0575: 3, S0346: 3, H0178: 3,	9q33-q34	125270, 125270, 128100, 137350, 146150, 191100, 215700, 223360, 223900, 253800, 253800, 268900, 601850

		S6028: 3, S0250: 3, S0036: 3, H0090: 3, H0040: 3, L0543: 3, L0438: 3, H0539: 3, L0745: 3, L0750: 3, S0031: 3, H0445: 3, L0596: 3, H0542: 3, S6024: 2, H0294: 2, T0049: 2, H0650: 2, H0656: 2, S0212: 2, S0282: 2, H0255: 2, H0662: 2, H0619: 2, S0300: 2, H0587: 2, T0082: 2, H0618: 2, S0049: 2, H0194: 2, H0123: 2, H0012: 2, H0266: 2, H0615: 2, H0553: 2, L0455: 2, H0163: 2, H0264: 2, H0488: 2, S0038: 2, S0112: 2, L0372: 2, L0766: 2, L0649: 2, L0664: 2, H0520: 2, H0519: 2, L0355: 2, S0406: 2, S0027: 2, L0744: 2, L0748: 2, L0740: 2, L0751: 2, S0434: 2, L0588: 2, L0605: 2, L0599: 2, L0361: 2, H0423: 2,				

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HSXBH24	981029	169	220 - 2199	2344	Ser-11 to Gly-21, Cys-47 to Leu-61, Ser-82 to Tyr-88, Cys-182 to Tyr-187, Trp-268 to Asp-285.	AR089: 2, AR060: 2, AR033: 2, AR096: 1, AR061: 1, AR039: 0, AR104: 0, AR055: 0, AR053: 0 H0261: 1, H0370: 1, H0559: 1, H0013: 1,	

						H0510: 1, S0036: 1, H0100: 1, L0771: 1, L0659: 1, H0666: 1, L0779: 1 and L0758: 1.		
HOFAE61	981108	170	2 - 505	2345	Lys-10 to Gly-21.	H0415: 1 and H0414: 1.		
HCFOF82	981272	171	2 - 901	2346	Trp-1 to Lys-6.	AR096: 3, AR033: 2, AR053: 2, AR089: 2, AR039: 2, AR060: 2, AR104: 1, AR061: 1, AR055: 1, AR052: 0 L0766: 3, L0777: 3, L0768: 2, L0748: 2, L0757: 2, L0759: 2, L0596: 2, T0060: 1, S0010: 1, H0251: 1, H0594: 1, S0214: 1, H0328: 1, H0615: 1, H0428: 1, H0674: 1, H0040: 1, H0412: 1, L0763: 1, L0803: 1, L0653: 1, L0666: 1, L0664: 1, S0028: 1, L0751: 1, H0423: 1 and H0506: 1.		
HOCMT79	981309	172	421 - 1431	2347	Thr-1 to Asp-12, Arg-27 to Asp-35, Arg-84 to Asp-89, Leu-93 to Thr-99, Pro-104 to Lys-113,	H0618: 12, H0052: 6, L0439: 6, H0253: 5, L0665: 4, H0013: 3, L0766: 3, L0775: 3, L0664: 3, L0742: 3,	5p	

					Thr-129 to Asp-137, Leu-265 to Thr-288.	L0748: 3, L0758: 3, H0556: 2, H0685: 2, S0040: 2, H0069: 2, H0599: 2, H0581: 2, H0327: 2, H0545: 2, H0571: 2, H0617: 2, H0135: 2, H0494: 2, H0509: 2, L0783: 2, L0809: 2, L0438: 2, H0660: 2, L0754: 2, L0599: 2, H0422: 2, H0265: 1, L0785: 1, H0484: 1, S0418: 1, S0420: 1, H0580: 1, S0045: 1, H0392: 1, H0600: 1, H0574: 1, H0256: 1, L0622: 1, H0486: 1, H0250: 1, H0575: 1, H0251: 1, H0544: 1, H0050: 1, T0010: 1, H0188: 1, H0213: 1, H0038: 1, H0616: 1, H0087: 1, H0561: 1, S0382: 1, H0132: 1, L0762: 1, L0770: 1, L0638: 1, L0761: 1, L0648: 1, L0662: 1, L0803: 1, L0651: 1, L0806: 1, L0659: 1, L0791: 1,		

						H0682: 1, H0539: 1, H0518: 1, H0521: 1, H0436: 1, L0741: 1, L0743: 1, L0757: 1, S0031: 1, L0595: 1, H0542: 1 and H0423: 1.		
HKAEI03	981319	173	1 - 405	2348		H0620: 1, H0615: 1, H0063: 1 and H0494: 1.	1p11.1-13.1	102770, 201810, 601414, 601691, 601691, 601691, 601691, 601718, 602094
HOCPO31	981593	174	330 - 470	2349		H0087: 2, H0660: 1 and H0672: 1.		
HAOTG88	981606	175	229 - 2	2350	Asn-1 to Lys-6.	H0686: 1, H0685: 1 and S0053: 1.		
HVCAH21	981768	176	2 - 616	2351	Ala-1 to Ala-12, Cys-57 to Tyr-65, Glu-76 to Asp-82, Arg-100 to Pro-105, Asp-110 to Pro-126, Cys-129 to Ala-139, Lys-147 to Pro-172, Pro-182 to Asp-188, Arg-199 to Met-205.	L0751: 6, L0588: 6, L0748: 5, L0758: 5, S0007: 4, S0438: 4, L0763: 4, L0776: 4, L0759: 4, L0604: 4, L0594: 4, L0362: 4, S0358: 3, S0410: 3, H0575: 3, H0617: 3, S0440: 3, L0775: 3, L0809: 3, S0374: 3, L0742: 3, H0656: 2,	8q13.3	214400, 600415, 601653, 601653, 602476

		S0360: 2, S0278: 2, L0622: 2, S0010: 2, H0251: 2, H0408: 2, T0023: 2, T0006: 2, T0067: 2, H0509: 2, L0646: 2, L0766: 2, L0381: 2, L0774: 2, L0806: 2, L0526: 2, L0518: 2, L0665: 2, H0689: 2, H0658: 2, S0378: 2, H0710: 2, L0754: 2, L0750: 2, L0731: 2, L0590: 2, L0591: 2, L0485: 2, H0543: 2, H0265: 1, S6024: 1, H0657: 1, S0212: 1, H0661: 1, H0663: 1, H0638: 1, S0420: 1, S0354: 1, S0376: 1, S0408: 1, S0132: 1, H0393: 1, H0282: 1, H0299: 1, H0333: 1, H0643: 1, H0574: 1, L0623: 1, H0486: 1, T0060: 1, H0250: 1, T0115: 1, T0110: 1, H0530: 1, H0012: 1, H0373: 1, H0030: 1, H0553: 1, H0673: 1, H0674: 1,			

						H0708: 1, H0090: 1, H0372: 1, H0412: 1, H0059: 1, T0042: 1, H0512: 1, S0370: 1, S0372: 1, H0633: 1, H0529: 1, L0520: 1, L0762: 1, L0768: 1, L0387: 1, L0522: 1, L0803: 1, L0651: 1, L0653: 1, L0558: 1, L0783: 1, L0382: 1, L0663: 1, S0053: 1, H0691: 1, H0593: 1, H0659: 1, H0670: 1, H0660: 1, H0666: 1, H0672: 1, S0328: 1, S0330: 1, H0539: 1, S0380: 1, H0518: 1, S3014: 1, S0027: 1, L0747: 1, L0752: 1, L0753: 1, L0755: 1, H0445: 1, S0434: 1, L0581: 1, L0599: 1, L0361: 1, H0423: 1, H0422: 1 and S0446: 1.		
HFPCK56	981812	177	1946 - 1818	2352		AR096: 12, AR052: 11, AR053: 10, AR033: 10, AR089: 9, AR055: 9, AR104: 8, AR060: 8, AR061: 5, AR039:		

5 L0809: 7, H0658: 6, L0748: 6, S0222: 5, L0794: 5, L0776: 5, L0756: 5, L0752: 5, L0731: 5, L0770: 4, L0662: 4, L0743: 4, L0439: 4, L0751: 4, L0754: 4, L0747: 4, L0759: 4, H0013: 3, L0769: 3, L0805: 3, L0789: 3, L0664: 3, L0740: 3, L0777: 3, L0753: 3, L0758: 3, H0333: 2, H0052: 2, H0545: 2, H0428: 2, L0483: 2, L0455: 2, H0509: 2, L0763: 2, L0771: 2, L0803: 2, L0804: 2, L0806: 2, L0527: 2, L0783: 2, L0666: 2, L0663: 2, S0152: 2, S0146: 2, L0744: 2, L0745: 2, L0603: 2, H0686: 1, S0116: 1, H0255: 1, S0418: 1, S0408: 1, H0645: 1, H0393: 1, L0717: 1, H0351: 1, H0370: 1, H0574: 1,					

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HAOSJ58	981859	178	3 - 482	2353	His-1 to Val-14.	L0740: 4, L0749: 4, L0794: 3, L0766: 3, H0686: 2, L0662: 2, L0747: 2, H0663: 1, S0420: 1, S0358: 1, L0717: 1, H0013: 1, L0638: 1, L0761: 1, L0364: 1, L0803: 1, L0657: 1, L0526: 1,	

								L0787: 1, L0665: 1, L0438: 1, L0759: 1 and L0592: 1.		
HOPJT48	981862	179	348 - 217	2354				H0685: 1, L0623: 1 and H0684: 1.		
HCFAV61	981914	180	3 - 1091	2355	Arg-1 to Ile-7, Gly-22 to Lys-42, Ser-52 to Glu-59, Leu-80 to Asp-87, Lys-107 to Thr-115, Trp-123 to Glu-131, Tyr-148 to Glu-155.			L0766: 5, L0747: 4, L0750: 4, L0777: 4, S0046: 2, H0486: 2, L0769: 2, L0805: 2, H0547: 2, L0749: 2, L0752: 2, L0759: 2, L0590: 2, S0026: 2, H0624: 1, H0686: 1, H0341: 1, S0358: 1, S0360: 1, S0045: 1, H0549: 1, H0587: 1, L0157: 1, H0566: 1, H0057: 1, H0320: 1, H0051: 1, H0687: 1, S0003: 1, H0428: 1, H0090: 1, L0794: 1, L0774: 1, L0806: 1, L0653: 1, L0655: 1, L0657: 1, L0659: 1, L0791: 1, L4501: 1, L0666: 1, L0664: 1, H0701: 1, H0672: 1, S0328: 1, H0539: 1, S0380: 1, H0478: 1, L0780: 1, L0755: 1,		

HPDWN44	981956	181	114 - 659	2356	Gln-79 to Tyr-86, Ile-96 to Ser-101, Pro-119 to Ser-126, Gln-162 to Gln-167.	L0731: 1, L0758: 1, H0595: 1, L0592: 1, H0653: 1, H0665: 1 and H0422: 1.	14	
						H0150: 26, S0003: 24, S0144: 14, S0278: 12, S0344: 12, L0748: 12, S0358: 10, H0046: 10, H0620: 10, S0214: 10, L0740: 9, H0521: 8, L0588: 8, H0545: 7, L0754: 7, H0575: 6, H0494: 6, S0126: 6, H0662: 5, H0031: 5, S0142: 5, L0752: 5, S0360: 4, H0309: 4, H0012: 4, H0687: 4, H0163: 4, H0038: 4, H0040: 4, H0672: 4, L0744: 4, L0755: 4, L0758: 4, L0599: 4, S0212: 3, H0580: 3, H0550: 3, T0082: 3, H0544: 3, H0024: 3, H0266: 3, H0428: 3, H0616: 3, T0067: 3, L0519: 3, L0532: 3, H0689: 3, S0380: 3, L0731: 3, S0026: 3, H0624: 2, S0040: 2,		

		H0255: 2, S0376: 2, H0431: 2, H0331: 2, H0427: 2, S0280: 2, H0599: 2, S0010: 2, H0581: 2, T0115: 2, H0530: 2, H0375: 2, L0483: 2, H0598: 2, H0090: 2, H0264: 2, H0412: 2, H0641: 2, H0647: 2, L0774: 2, L0666: 2, L0665: 2, H0547: 2, H0682: 2, H0658: 2, H0522: 2, S0044: 2, S3012: 2, S0027: 2, L0745: 2, L0747: 2, L0750: 2, L0757: 2, L0759: 2, H0445: 2, S0194: 2, L0600: 2, H0170: 1, H0686: 1, S0114: 1, H0583: 1, H0657: 1, L0785: 1, H0341: 1, S0282: 1, H0254: 1, H0661: 1, H0638: 1, S0348: 1, S0418: 1, L0005: 1, S0356: 1, S0354: 1, T0008: 1, S0007: 1, H0208: 1, S0046: 1, H0549: 1, H0455: 1, H0497: 1,			

		H0574: 1, H0632: 1, H0486: 1, T0040: 1, T0060: 1, H0013: 1, H0069: 1, H0635: 1, H0156: 1, H0042: 1, H0036: 1, H0037: 1, S0346: 1, H0310: 1, H0251: 1, H0596: 1, H0597: 1, H0231: 1, H0050: 1, L0471: 1, H0099: 1, H0594: 1, H0267: 1, S0318: 1, H0364: 1, H0328: 1, H0622: 1, H0644: 1, H0674: 1, H0063: 1, H0268: 1, H0269: 1, H0059: 1, H0625: 1, S0440: 1, H0646: 1, H0649: 1, S0210: 1, L0762: 1, L0769: 1, L0796: 1, L0761: 1, L0773: 1, L0768: 1, L0364: 1, L0766: 1, L0803: 1, L0804: 1, L0653: 1, L0527: 1, L0657: 1, L0543: 1, H0519: 1, S0122: 1, H0365: 1, H0684: 1, H0659: 1, H0648: 1, S0328: 1, S0146: 1,				

					H0448: 1, S0432: 1, S3014: 1, S0028: 1, S0032: 1, L0751: 1, L0753: 1, S0031: 1, H0444: 1, L0596: 1, L0589: 1, L0362: 1, L0603: 1, S0011: 1, H0668: 1, H0653: 1, H0667: 1, S0276: 1, H0542: 1, H0423: 1, H0422: 1, S0458: 1, H0506: 1 and H0293: 1.		180105, 190900, 222800, 246900
HOVJY54	982032	182	16 - 372	2357	Gly-1 to His-11, Pro-26 to Ser-34, Gly-50 to Glu-67, Gly-86 to Pro-91.	L0809: 10, H0150: 4, L0769: 4, L0804: 4, L0757: 4, H0617: 3, L0779: 3, H0662: 2, L0005: 2, S0444: 2, H0545: 2, H0135: 2, H0494: 2, L0803: 2, L0783: 2, L0663: 2, H0547: 2, L0751: 2, L0777: 2, H0484: 1, H0661: 1, S0420: 1, S0354: 1, S0358: 1, H0619: 1, H0587: 1, H0427: 1, H0581: 1, H0196: 1, H0309: 1, H0123: 1, H0081: 1, H0594: 1, S0312: 1, H0688: 1, L0483: 1,	7q32	

					H0033: 1, H0424: 1, H0213: 1, H0316: 1, H0163: 1, H0087: 1, H0412: 1, H0059: 1, H0100: 1, T0041: 1, S0438: 1, S0144: 1, S0344: 1, L0770: 1, L0761: 1, L0800: 1, L0773: 1, L0662: 1, L0794: 1, L0375: 1, L0651: 1, L0379: 1, L0659: 1, L0383: 1, L0789: 1, H0520: 1, H0521: 1, H0696: 1, S0406: 1, S3014: 1, S0206: 1, L0747: 1, L0756: 1, L0780: 1, L0752: 1, L0601: 1, H0667: 1, H0542: 1 and H0543: 1.		138190, 254210, 271900, 600179, 600977, 601202, 601777	
HLDOG74	982042	183	1 - 756	2358	Pro-37 to Ser-45, Asp-64 to Thr-69, Asp-151 to Gln-157, Arg-191 to Lys-196.	H0510: 1	17p13	
HE8MM52	982197	184	19 - 1146	2359	Gly-10 to Gly-16, Pro-25 to Gly-30.	AR033: 3, AR061: 3, AR096: 3, AR089: 3, AR055: 2, AR060: 2,		

					AR039: 1, AR104: 0, AR052: 0, AR053: 0 S0414: 7, L0794: 4, H0651: 4, L0439: 3, L0749: 3, H0647: 2, L0766: 2, L0803: 2, L0659: 2, L0756: 2, L0599: 2, H0657: 1, H0645: 1, S0222: 1, H0574: 1, H0632: 1, H0486: 1, H0013: 1, H0014: 1, H0355: 1, S6028: 1, S0003: 1, H0673: 1, L0564: 1, S0438: 1, L0764: 1, L0804: 1, L0748: 1, L0754: 1, L0750: 1, L0779: 1, L0581: 1, L0608: 1, S0196: 1 and H0506: 1.		
HJBCC19	982465	185	2 - 949	2360	Cys-1 to Gly-6.	L0766: 5, L0749: 5, L0803: 3, L0809: 3, L0758: 3, S0007: 2, H0124: 2, H0135: 2, L0771: 2, L0744: 2, L0740: 2, L0747: 2, L0779: 2, L0600: 2, H0556: 1, S0116: 1, S0444: 1, H0393: 1, H0351: 1, L0118: 1,		

					H0038: 1, H0040: 1, T0042: 1, S0426: 1, L0763: 1, L0662: 1, L0775: 1, L0776: 1, L0659: 1, L0647: 1, L0666: 1, H0670: 1, L0439: 1, L0752: 1, L0595: 1 and H0721: 1.	Xq28	300031, 300044, 300048, 300049, 300049, 300055, 300100, 300100, 300104, 300126, 301201, 301590, 302060, 302060, 302060, 302060, 302960, 303700, 303800, 303900, 304800, 305900,
HODAA93	982618	186	3 - 899	2361	Val-50 to His-55, Ser-75 to Cys-81, Lys-98 to Lys-104.	H0328: 1, H0615: 1, L0804: 1 and H0677: 1.		

305900, 305900, 306700, 306995, 308310, 308840, 308840, 308840, 309200, 309548, 309620, 309900, 310300, 310400, 310460, 310460, 311300, 311510, 314300, 314400						3q21-q25	106165, 117700, 117700, 150210, 169600, 180380, 180380, 180380, 190000, 203500,
			2362	Pro-34 to Ser-42, Cys-82 to Lys-89, Ser-147 to Lys-156, Ser-198 to Cys-205.			
			91 - 705				
		187					
	982764						
HSPSI74							

							222900, 232050, 276902, 600882, 601199, 601199, 601199, 601471, 601682
					Gly-12 to Pro-23, Gly-41 to Thr-47.	L0742: 11, L0439: 8, H0052: 5, L0794: 5, L0438: 5, S0222: 3, H0457: 3, H0135: 3, L0769: 3, L0768: 3, L0657: 3, L0666: 3, H0547: 3, H0423: 3, H0483: 2, S0354: 2, H0427: 2, H0581: 2, S0049: 2, H0494: 2, L0369: 2, L0662: 2, H0658: 2, L0752: 2, L0758: 2, L0592: 2, S0040: 1, H0650: 1, H0657: 1, L0427: 1, S0418: 1, S0358: 1, S0360: 1, H0580: 1, H0645: 1, H0550: 1, H0486: 1, L0309: 1, H0630: 1, H0687: 1, H0428: 1, H0622: 1,
				2363			
			2115 - 2342				
		188					
	983008						
HCEHZ42							

					H0553: 1, S0038: 1, H0560: 1, H0538: 1, L0638: 1, L0639: 1, L0646: 1, L0659: 1, L0526: 1, L0783: 1, L0809: 1, L0647: 1, H0519: 1, H0670: 1, H0651: 1, H0521: 1, S0013: 1, S0028: 1, L0741: 1, L0753: 1, L0755: 1, L0731: 1, H0445: 1, L0361: 1, L0366: 1 and H0543: 1.		109565, 109565, 142640, 228960, 261515, 600044
HDPVU15	983592	189	66 - 737	2364	Pro-16 to Gly-23, Ser-30 to Lys-38, Glu-44 to Cys-50, Pro-81 to Lys-86, Gly-135 to Gly-140, Arg-167 to Thr-176, Leu-192 to Phe-201, Pro-203 to Ser-209, His-216 to Asn-224.	H0486: 2, H0521: 2, L0748: 2, H0171: 1, H0556: 1, H0638: 1, H0351: 1, H0052: 1, H0083: 1, L0646: 1, L0794: 1, L0766: 1, L0389: 1, L0803: 1, L0375: 1, L0655: 1, L0527: 1, L0438: 1, H0519: 1, H0435: 1, H0666: 1, S0328: 1, S0378: 1, L0750: 1, L0777: 1, L0755: 1, L0592: 1, H0668: 1 and H0543: 1.	3q27	
HT5GC28	984008	190	1 - 273	2365	Ala-1 to Asn-16, Thr-65 to Thr-74.	H0584: 1 and S0126: 1.	11	

HDABW50	984168	191	56 - 523	2366	Arg-21 to Gly-28, Pro-30 to Ser-36, Arg-54 to Arg-61, Gln-125 to Gly-130, Ala-140 to Gln-145.	S0412: 19, H0657: 7, L0748: 7, L0777: 7, H0039: 6, H0659: 6, L0749: 6, H0040: 5, L0655: 5, L0747: 5, L0438: 4, L0742: 4, L0779: 4, L0758: 4, L0599: 4, H0341: 3, S0376: 3, H0497: 3, L0471: 3, H0015: 3, H0687: 3, H0090: 3, L0769: 3, L0776: 3, L0659: 3, L0517: 3, L0664: 3, H0672: 3, L0740: 3, L0752: 3, L0588: 3, L0605: 3, L0608: 3, L0362: 3, H0686: 2, H0662: 2, S0354: 2, S0360: 2, H0559: 2, H0098: 2, H0318: 2, H0545: 2, H0644: 2, L0455: 2, H0135: 2, H0038: 2, S0002: 2, L0646: 2, L0764: 2, L0803: 2, L0375: 2, L0666: 2, S0330: 2, H0539: 2, S0152: 2, H0436: 2, L0755: 2, L0731: 2, L0759: 2, S0434: 2,	6q25.3-q26	100678, 147280, 167000, 173350, 173350, 173350, 180020, 600320, 600883, 602544

		H0543: 2, L0465: 2, H0170: 1, H0265: 1, H0556: 1, T0002: 1, H0656: 1, H0663: 1, S0348: 1, S0356: 1, S0444: 1, S0408: 1, S0046: 1, H0619: 1, H0393: 1, H0351: 1, H0431: 1, H0370: 1, H0586: 1, H0643: 1, H0257: 1, H0485: 1, T0060: 1, H0013: 1, H0069: 1, H0599: 1, H0575: 1, H0004: 1, S0010: 1, S0346: 1, H0374: 1, S0049: 1, H0052: 1, H0251: 1, H0309: 1, H0546: 1, H0046: 1, H0123: 1, S0051: 1, H0356: 1, H0510: 1, H0266: 1, S0250: 1, S0003: 1, H0615: 1, L0483: 1, H0031: 1, L0142: 1, L0055: 1, H0032: 1, H0673: 1, H0674: 1, H0124: 1, H0708: 1, H0316: 1, H0163: 1, H0616: 1, H0412: 1, H0413: 1, H0623: 1,				

		H0100: 1, T0041: 1, T0042: 1, S0440: 1, H0509: 1, H0132: 1, S0150: 1, H0641: 1, S0422: 1, S0426: 1, H0529: 1, L0369: 1, L0520: 1, L0371: 1, L0796: 1, L0761: 1, L0772: 1, L0800: 1, L0374: 1, L0521: 1, L0364: 1, L0794: 1, L0766: 1, L0522: 1, L0805: 1, L0654: 1, L0606: 1, L0527: 1, L0558: 1, L0647: 1, L0789: 1, S0374: 1, H0519: 1, H0689: 1, H0658: 1, H0660: 1, S0328: 1, S0378: 1, H0521: 1, S0168: 1, H0555: 1, S3012: 1, S0037: 1, S0028: 1, L0439: 1, L0750: 1, L0756: 1, L0757: 1, S0260: 1, L0591: 1, L0593: 1, L0361: 1, S0026: 1, H0653: 1, S0192: 1, S0242: 1, H0542: 1, H0423: 1 and H0422: 1.			

HAQBH11	985043	192	207 - 626	2367	Glu-12 to Arg-25, Leu-36 to Gly-41.	H0360: 12, L0747: 10, L0748: 7, S0007: 6, L0731: 6, L0769: 5, L0766: 5, L0749: 5, L0740: 4, L0751: 4, L0750: 4, L0779: 4, L0471: 3, L0776: 3, L0526: 3, L0666: 3, L0439: 3, H0686: 2, S0408: 2, H0625: 2, L0639: 2, L0646: 2, L0768: 2, L0774: 2, L0655: 2, L0542: 2, L0790: 2, H0659: 2, H0134: 2, L0777: 2, L0755: 2, H0170: 1, T0002: 1, H0685: 1, H0295: 1, S0114: 1, H0663: 1, H0125: 1, S0444: 1, S0360: 1, H0580: 1, S0046: 1, H0351: 1, H0331: 1, L0623: 1, H0244: 1, H0156: 1, T0048: 1, H0052: 1, H0083: 1, H0266: 1, H0328: 1, H0031: 1, H0038: 1, H0412: 1, T0041: 1, S0438: 1, S0440: 1, L0520: 1, L0371: 1,	17p13.3	113721, 247200, 600059, 601545

						L0770: 1, L5575: 1, L0761: 1, L0667: 1, L0764: 1, L0771: 1, L0662: 1, L0794: 1, L0803: 1, L0775: 1, L0375: 1, L0658: 1, L0789: 1, L0532: 1, L0665: 1, S0374: 1, H0693: 1, S0126: 1, H0365: 1, H0711: 1, H0684: 1, H0660: 1, S0330: 1, H0521: 1, H0631: 1, S3012: 1, L0742: 1, L0743: 1, L0752: 1, L0757: 1, L0758: 1, L0759: 1, L0480: 1, L0588: 1, L0591: 1, L0592: 1, H0665: 1, H0543: 1 and H0506: 1.		
HMVAW42	985280	193	1047 - 727	2368		S0212: 1, H0592: 1 and H0052: 1.		
HAGDF03	985323	194	1 - 690	2369	Pro-27 to His-33.	L0779: 3, S0010: 2, H0581: 1, H0081: 1, L0770: 1, L0794: 1, H0689: 1, H0666: 1, S0330: 1, L0593: 1, S0424: 1 and H0506: 1.	4	
HOPKI29	985401	195	2 - 547	2370	Glu-4 to Gly-12, Gly-15 to Lys-21,	L0750: 11, S0026: 7, L0518: 6, L0752: 6,	12	

					Lys-53 to Leu-59, Ala-113 to Asp-118, Glu-137 to Met-143, Thr-164 to Lys-170, Pro-175 to Glu-180.	L0588: 6, L0747: 5, L0758: 5, S0116: 4, L0769: 4, S0360: 3, H0599: 3, H0620: 3, H0059: 3, L0766: 3, L0775: 3, L0743: 3, L0731: 3, L0757: 3, H0543: 3, S0040: 2, T0049: 2, S0212: 2, H0305: 2, S0356: 2, S0358: 2, S0045: 2, S0278: 2, L0623: 2, S0003: 2, H0031: 2, H0412: 2, H0646: 2, S0142: 2, L0763: 2, L0764: 2, L0774: 2, L0776: 2, L0659: 2, L0789: 2, L0666: 2, S0126: 2, H0648: 2, H0694: 2, S3014: 2, L0754: 2, L0755: 2, H0445: 2, L0599: 2, S6024: 1, H0650: 1, L0808: 1, H0341: 1, H0484: 1, H0402: 1, H0638: 1, S0348: 1, S0376: 1, S0444: 1, H0440: 1, H0640: 1, H0409: 1, H0586: 1, L0586: 1, S0280: 1,		

		L0021: 1, S0010: 1, S0665: 1, H0318: 1, H0581: 1, H0251: 1, L0040: 1, H0231: 1, H0545: 1, L0471: 1, H0012: 1, H0024: 1, H0014: 1, H0373: 1, H0051: 1, S0025: 1, H0266: 1, H0267: 1, H0288: 1, S0022: 1, S0214: 1, H0112: 1, H0405: 1, H0169: 1, S0364: 1, S0366: 1, H0090: 1, H0087: 1, S0112: 1, T0041: 1, H0494: 1, H0509: 1, S0144: 1, S0422: 1, L0770: 1, L0373: 1, L0768: 1, L0364: 1, L0650: 1, L0784: 1, L0527: 1, L0657: 1, L0665: 1, S0052: 1, S0374: 1, S0122: 1, H0689: 1, H0684: 1, H0659: 1, S0328: 1, H0521: 1, S0406: 1, H0555: 1, S0027: 1, L0740: 1, L0749: 1, L0759: 1, H0444: 1, L0485: 1, L0604: 1,			

						L0366: 1, H0668: 1, H0653: 1, S0192: 1 and H0506: 1.			
HAJCA11	985580	196	391 - 1293	2371	Asp-23 to Ser-29, Lys-36 to Ala-48, Phe-66 to Arg-74, Gly-92 to Thr-98, Arg-137 to Asp-142, Met-155 to Ser-161.	L0471: 2, H0561: 2, H0543: 2, H0013: 1, H0090: 1, H0634: 1, H0551: 1 and H0560: 1.	2p16		126600, 126600, 136435, 160980, 600678
HWAHA11	986078	197	1144 - 602	2372		AR061: 3, AR089: 3, AR096: 3, AR039: 2, AR060: 2, AR033: 1, AR104: 1, AR055: 1, AR052: 0, AR053: 0 L0751: 6, H0659: 4, H0657: 2, L0764: 2, L0655: 2, H0682: 2, H0521: 2, L0743: 2, L0749: 2, H0265: 1, T0049: 1, S0134: 1, H0255: 1, H0638: 1, S0358: 1, S0376: 1, H0637: 1, S0045: 1, H0549: 1, H0486: 1, T0060: 1, H0575: 1, H0581: 1, H0061: 1, H0266: 1, L0055: 1, H0068: 1, H0090: 1, H0551: 1, H0413: 1, S0142: 1, S0002: 1,			

						L0769: 1, L0775: 1, L0776: 1, L0657: 1, L0664: 1, H0658: 1, H0670: 1, H0648: 1, S0378: 1, L0779: 1, L0731: 1, L0601: 1 and H0423: 1.		
HSAMI43	986158	198	2 - 1477	2373	Glu-27 to Thr-33.	L0717: 2, H0660: 2, S0420: 1, S0376: 1, H0393: 1, H0013: 1, H0266: 1, H0038: 1, H0529: 1, L0800: 1, L0794: 1, L0766: 1, L0657: 1, L0666: 1, H0658: 1, H0626: 1, L0759: 1, H0665: 1, H0543: 1 and H0677: 1.		
HNFJH73	986165	199	1 - 609	2374	Ser-2 to Gly-7, Tyr-18 to Phe-26, Lys-39 to Gly-57, Gly-100 to Pro-106, Asn-109 to Ser-116, Tyr-119 to Ile-125, Pro-151 to Phe-157.	L0439: 10, L0740: 8, L0794: 7, L0805: 7, L0438: 6, H0539: 6, L0748: 6, L0754: 5, L0769: 4, L0776: 4, H0521: 4, H0615: 3, H0040: 3, H0100: 3, L0595: 3, H0624: 2, H0170: 2, H0656: 2, S0045: 2, H0013: 2, S0010: 2, H0051: 2, L0766: 2, L0774: 2, L0375: 2, L0806: 2,	3q28	165500, 600700

					H0670: 2, H0648: 2, L0753: 2, L0731: 2, L0759: 2, L0589: 2, H0686: 1, S0040: 1, S0342: 1, L0005: 1, H0431: 1, H0333: 1, H0485: 1, H0486: 1, H0327: 1, H0546: 1, H0046: 1, H0009: 1, H0123: 1, H0012: 1, H0271: 1, H0039: 1, H0030: 1, H0644: 1, H0628: 1, H0032: 1, H0591: 1, H0058: 1, T0067: 1, S0450: 1, S0438: 1, L0770: 1, L0764: 1, L0381: 1, L0803: 1, L0661: 1, L0789: 1, H0144: 1, S0328: 1, H0540: 1, L0747: 1, L0749: 1, L0750: 1, L0779: 1, L0777: 1, L0757: 1, S0031: 1, H0445: 1, H0595: 1, L0599: 1, L0603: 1 and H0008: 1.		
HNTCH03	986328	200	57 - 248	2375	Val-15 to Pro-21, Leu-56 to Gln-64.	L0663: 2, H0556: 1, H0686: 1, L0717: 1, L0764: 1, L0794: 1, L0656: 1, L0665: 1,		

HSUAA20	986744	201	2 - 1321	2376	Val-36 to Gly-52, Asp-140 to Ser-148, Ser-158 to Thr-163, Arg-168 to Ala-175, Glu-196 to Arg-205, Ser-271 to Lys-276, Val-281 to Tyr-294, Arg-305 to Met-310, Cys-314 to Ile-324, Gln-326 to Tyr-345, Phe-356 to Trp-361, Leu-383 to Ala-390, Glu-412 to Ile-420.	S0374: 1, H0519: 1, H0659: 1, H0648: 1, L0748: 1, L0759: 1, S0436: 1 and L0608: 1.	L0750: 12, L0747: 7, H0543: 7, L0748: 6, L0764: 3, H0539: 3, H0657: 2, L0785: 2, S0358: 2, H0266: 2, H0031: 2, L0766: 2, L0775: 2, L0783: 2, L0666: 2, L0663: 2, L0438: 2, H0435: 2, H0658: 2, H0670: 2, L0588: 2, H0542: 2, H0624: 1, S0342: 1, L0443: 1, L0808: 1, H0305: 1, L0481: 1, H0431: 1, H0438: 1, S0280: 1, L0021: 1, H0036: 1, H0004: 1, H0318: 1, N0006: 1, H0050: 1, L0471: 1, H0687: 1, S0003: 1, H0428: 1, L0455: 1, H0494: 1, H0625: 1, L0598: 1, L0763: 1, L0769: 1, L0761: 1, L0772: 1, L0641: 1, L0773: 1, L0662: 1,	17p13.3	113721, 247200, 600059, 601545

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HSPAD08	986767	202	809 - 1054	2377	Pro-32 to Ser-37, Arg-52 to Gly-63, Lys-66 to Gly-73.	H0670: 4, S0408: 3, L0666: 3, L0665: 3, H0156: 1, H0615: 1, L0776: 1, L0527: 1, H0658: 1 and H0478: 1.	20q12-q13.2	
HFKBA32	987018	203	1 - 618	2378	Phe-1 to Cys-10.	L0439: 7, L0438: 4, L0770: 3, L0809: 3, S0360: 2, H0011: 2, L0794: 2, H0672: 2, L0749: 2, L0756: 2, L0759: 2, S0046: 1,	20p12	112261, 176640, 176640, 176640, 236700, 601920

					H0437: 1, T0048: 1, S0050: 1, S0051: 1, H0687: 1, L0455: 1, H0100: 1, L0351: 1, L0769: 1, L0761: 1, L0768: 1, L0806: 1, L0659: 1, L0383: 1, L0666: 1, H0547: 1, H0539: 1, L0748: 1, L0747: 1, L0780: 1, L0731: 1, L0366: 1 and L0697: 1.			
HHFLU49	987071	204	50 - 745	2379	Val-23 to Gly-32.	L0751: 4, S0126: 3, H0658: 2, L0741: 2, H0171: 1, T0002: 1, S0001: 1, H0619: 1, H0574: 1, H0618: 1, H0199: 1, H0057: 1, H0020: 1, H0201: 1, L0055: 1, H0038: 1, L0769: 1, L0646: 1, L0643: 1, L0794: 1, L0766: 1, L0774: 1, L0655: 1, L0659: 1, L0665: 1, H0703: 1, H0659: 1, S0028: 1, L0777: 1, L0780: 1, L0731: 1, L0758: 1, S0031: 1, L0599: 1, H0136: 1 and H0543: 1.	19q13.3	113900, 126340, 126391, 130410, 134790, 138570, 160900, 173850, 258501, 600040, 602225, 602225

HOENX16	987112	205	164 - 850	2380	Pro-3 to Val-18, Trp-21 to Gly-27.	L0805: 18, L0776: 16, L0751: 14, L0759: 10, L0770: 8, L0769: 6, L0758: 6, H0351: 4, L0803: 4, L0807: 4, L0754: 4, H0716: 3, S0250: 3, H0615: 3, H0644: 3, L0791: 3, L0793: 3, S0408: 2, H0013: 2, H0594: 2, H0591: 2, L0796: 2, L0521: 2, L0662: 2, L0794: 2, L0774: 2, L0518: 2, L0792: 2, L0666: 2, H0144: 2, H0670: 2, L0740: 2, L0779: 2, H0624: 1, S0342: 1, H0640: 1, H0369: 1, H0549: 1, H0486: 1, S0280: 1, L0021: 1, L0022: 1, S0010: 1, L0109: 1, H0024: 1, S0051: 1, H0428: 1, H0622: 1, H0032: 1, T0067: 1, H0059: 1, L0640: 1, L0763: 1, L0773: 1, L0659: 1, L0809: 1, L0788: 1, L0532: 1, L0665: 1, H0547: 1,	6p22-p21	180297, 248611, 251000, 263200, 600211, 600701, 601690

						S0126: 1, S0328: 1, S0378: 1, S0037: 1, L0745: 1, L0750: 1, L0777: 1, L0780: 1, S0434: 1, L0361: 1, S0194: 1, S0398: 1, S0460: 1, H0008: 1 and H0352: 1.		
HTFOW71	987165	206	14 - 400	2381	Thr-1 to Ser-6.	L0766: 4, L0665: 4, L0754: 3, H0013: 2, H0052: 2, L0776: 2, H0144: 2, L0777: 2, L0622: 1, H0427: 1, S0344: 1, L0520: 1, L0774: 1, L0775: 1, L0527: 1, L0659: 1, L0666: 1, H0689: 1, H0682: 1, H0672: 1, H0522: 1, L0741: 1, L0750: 1, L0756: 1, L0758: 1 and S0424: 1.		
HTTAG03	987262	207	1270 - 68	2382	Pro-4 to Pro-27, Ala-35 to Arg-43, Asp-56 to Val-61.	L0439: 70, L0666: 20, L0748: 20, H0013: 15, L0663: 15, L0740: 15, L0754: 14, L0438: 12, L0769: 11, L0752: 11, H0046: 9, L0662: 9, L0776: 9, L0665: 9, H0547: 9, L0766: 8, H0670: 8, H0622: 7,		

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						S0011: 1, H0667: 1, S0192: 1, S0276: 1, H0542: 1, S0462: 1 and H0506: 1.		
HNTNN89	987577	208	2 - 562	2383	Glu-134 to Val-139, Trp-147 to Lys-161, Ala-163 to Pro-172.	S0250: 4, S0358: 3, N0006: 3, H0620: 3, H0014: 3, H0656: 2, H0024: 2, L0776: 2, L0750: 2, S0212: 1, H0450: 1, H0549: 1, H0550: 1, H0575: 1, H0036: 1, H0590: 1, H0050: 1, L0471: 1, H0373: 1, H0628: 1, H0038: 1, H0551: 1, H0264: 1, H0100: 1, H0494: 1, H0509: 1, L0790: 1, H0520: 1, H0435: 1, H0521: 1, S0027: 1, S0032: 1, L0759: 1, S0434: 1, L0485: 1, L0595: 1, H0542: 1, H0543: 1 and S0021: 1.		
HRADQ96	987636	209	165 - 398	2384	Pro-5 to Gly-13, Gly-26 to Gly-34, Leu-49 to Glu-62, Gly-67 to Val-78.	L0758: 4, L0803: 3, L0779: 3, L0794: 2, L0776: 2, L0789: 2, H0555: 2, L0748: 2, L0731: 2, H0622: 1, L0800: 1, L0809: 1,	6p21.3	106300, 108800, 120290, 120290, 120810, 120820,

					L0666: 1, H0670: 1, H0648: 1, L0745: 1, L0749: 1, L0759: 1 and L0596: 1.		142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475
HLDCJ16	987808	210	93 - 776	2385	Asn-85 to Glu-91.	L0731: 29, L0662: 11, L0747: 11, S0003: 9, L0666: 9, L0779: 9, L0758: 9, L0809: 8, S0360: 7, S0132: 7, H0046: 7, L0752: 7, S0040: 6, S0358: 6, L0803: 6, L0659: 6, L0748: 6, L0777: 6, H0599: 5, L0471: 5,	

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HCOPH23	987900	211	268 - 603	2386		S0386: 1, H0670: 1 and H0444: 1.	2q36	120070, 120131, 120131, 138030, 147545, 259900, 262000
HEEAQ78	988159	212	466 - 149	2387	Ala-9 to Phe-15, Gly-44 to Pro-52, Pro-100 to Lys-106.	H0549: 2, H0023: 2, H0024: 2, L0750: 2, H0624: 1, L0659: 1, L0809: 1, L0740: 1, L0747: 1 and L0731: 1.	17q23	106180, 138700, 139250, 150200, 154275, 176960, 249000, 253250
HOFNY16	988363	213	2 - 853	2388	Ala-1 to Thr-9, Arg-62 to Trp-77, Arg-176 to Pro-181, Val-191 to Leu-198, Lys-265 to Lys-272, Asn-276 to Val-283.	L0766: 5, L0755: 5, L0770: 4, L0659: 4, L0750: 4, L0752: 4, S0360: 3, L0764: 3, L0662: 3, L0774: 3, L0740: 3, L0731: 3, L0759: 3, S0132: 2, H0411: 2, H0188: 2, H0413: 2, L0598: 2, L0805: 2, L0782: 2, L0664: 2, H0144: 2, L0751: 2, L0749: 2, S0194: 2, H0624: 1, H0713: 1, S0218: 1, S0116: 1, H0663: 1,		

HSLCX45	988441	214	1 - 1458	2389	His-11 to Pro-18,	L0481: 1, S0376: 1, H0415: 1, H0586: 1, H0587: 1, T0109: 1, H0545: 1, H0046: 1, H0123: 1, T0023: 1, H0166: 1, H0038: 1, H0551: 1, H0264: 1, H0059: 1, T0042: 1, H0494: 1, H0560: 1, S0440: 1, H0529: 1, L0762: 1, L0763: 1, L0769: 1, L0796: 1, L0637: 1, L0772: 1, L0646: 1, L0800: 1, L0771: 1, L0768: 1, L0649: 1, L0803: 1, L0661: 1, L0657: 1, L0532: 1, S0374: 1, H0520: 1, S0126: 1, S0122: 1, H0659: 1, H0658: 1, H0660: 1, S0404: 1, S0037: 1, S3014: 1, S0206: 1, L0748: 1, L0747: 1, L0756: 1, L0757: 1, L0758: 1, S0434: 1, S0436: 1, L0591: 1, L0608: 1, L0595: 1 and S0276: 1.	S0436: 10, L0803: 6,	19q12	

	Arg-40 to Asn-53.	H0046: 5, L0754: 5, L0362: 5, L0794: 4, L0766: 4, L0749: 4, L0779: 4, S0444: 3, L0805: 3, L0527: 3, H0648: 3, L0439: 3, L0740: 3, L0747: 3, L0750: 3, L0777: 3, L0752: 3, H0671: 2, S0360: 2, S0408: 2, H0486: 2, L0105: 2, T0067: 2, H0059: 2, H0652: 2, L0770: 2, L0641: 2, L0662: 2, L0655: 2, L0783: 2, L0793: 2, L0665: 2, L0438: 2, H0520: 2, H0435: 2, H0659: 2, S0136: 2, L0731: 2, L0758: 2, L0759: 2, S0424: 2, H0717: 1, S0402: 1, H0657: 1, H0254: 1, S0348: 1, S0442: 1, H0722: 1, S0132: 1, S0476: 1, H0640: 1, S0300: 1, L0717: 1, S0278: 1, S0222: 1, H0587: 1, H0156: 1, H0575: 1, T0082: 1, H0318: 1,

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HLMJB09	988499	215	249 - 506	2390	Gln-10 to Lys-15, Pro-28 to Gln-33.	H0255: 1, H0002: 1, H0266: 1, L0803: 1, H0660: 1, L0751: 1 and L0777: 1.			
HOVEF60	988526	216	113 - 724	2391	Tyr-18 to Lys-23,	H0428: 8, L0603: 2			

HOGDR72	988536	217	2 - 415	2392	Pro-32 to Arg-44, Pro-51 to Gly-56.	Lys-56 to Leu-70, Gln-85 to Ala-91, Met-123 to Asn-133.	H0617: 10, S0410: 8, L0769: 7, H0038: 6, L0439: 6, L0750: 6, L0752: 6, L0758: 6, S0360: 5, L0775: 5, S0406: 5, H0150: 4, L0157: 4, H0620: 4, H0087: 4, S0440: 4, S0344: 4, L0763: 4, S0328: 4, L0747: 4, H0224: 3, H0484: 3, H0402: 3, S0049: 3, H0708: 3, L0773: 3, L0805: 3, L0809: 3, L0519: 3, H0670: 3, L0748: 3, L0731: 3, L0757: 3, L0581: 3, H0295: 2, H0341: 2, S0444: 2, S0222: 2, L0622: 2, H0253: 2, H0309: 2, T0115: 2, H0544: 2, H0545: 2, H0081: 2, H0012: 2, H0673: 2, S0036: 2, H0616: 2, L0770: 2, L0518: 2, H0725: 2, S0374: 2, H0696: 2, L0588: 2, H0543: 2, and S0114: 1.	13	

		L0615: 1, H0160: 1, H0225: 1, H0713: 1, S6024: 1, S0430: 1, H0656: 1, S0116: 1, S0212: 1, H0483: 1, H0306: 1, H0638: 1, H0125: 1, S0420: 1, S0358: 1, S0408: 1, H0637: 1, S0476: 1, H0640: 1, H0411: 1, S0278: 1, H0441: 1, H0461: 1, H0298: 1, H0333: 1, L0623: 1, H0486: 1, H0427: 1, H0156: 1, H0599: 1, T0082: 1, T0048: 1, H0318: 1, H0581: 1, H0196: 1, H0597: 1, L0738: 1, H0530: 1, H0242: 1, H0024: 1, H0373: 1, L0163: 1, H0275: 1, H0188: 1, H0284: 1, S0003: 1, H0428: 1, H0213: 1, H0405: 1, H0181: 1, H0182: 1, H0606: 1, L0055: 1, H0163: 1, H0063: 1, T0067: 1, H0100: 1, H0560: 1, H0561: 1, H0647: 1,			

						S0142: 1, L0598: 1, L3904: 1, L0761: 1, L0772: 1, L0764: 1, L0767: 1, L0768: 1, L0766: 1, L0649: 1, L0803: 1, L0774: 1, L0375: 1, L0806: 1, L0776: 1, L0517: 1, L0526: 1, L0783: 1, L0789: 1, H0144: 1, L0438: 1, H0689: 1, H0690: 1, H0682: 1, H0683: 1, H0435: 1, H0659: 1, H0648: 1, H0521: 1, H0522: 1, S3014: 1, S0027: 1, L0755: 1, L0759: 1, H0445: 1, H0343: 1, H0595: 1, L0608: 1, H0136: 1, S0276: 1, H0542: 1, L0600: 1 and H0352: 1.	
HOCMF20	988556	218	1 - 366	2393	Gly-1 to Ser-20, Phe-29 to Asn-37, Asn-55 to Tyr-64, Ala-69 to Asp-78, Tyr-82 to Ala-91, Lys-100 to Glu-122.	S0328: 4, L0731: 3, S0356: 2, H0013: 2, L0794: 2, L0649: 2, H0435: 2, L0748: 2, L0749: 2, L0750: 2, L0758: 2, L0592: 2, H0685: 1, S0420: 1, S0360: 1, H0575: 1,	

					L0471: 1, S0362: 1, H0030: 1, H0031: 1, H0068: 1, H0038: 1, H0412: 1, H0413: 1, H0538: 1, L0637: 1, L0768: 1, L0766: 1, L0658: 1, L0659: 1, H0144: 1, H0547: 1, S0126: 1, H0659: 1, H0660: 1, S0027: 1, L0754: 1, L0786: 1, L0779: 1, L0755: 1 and L0757: 1.		
HAMHH26	988737	219	309 - 773	2394	Ala-12 to Asn-18.	H0618: 1, H0081: 1, T0010: 1, H0560: 1, L0763: 1, L0803: 1 and L0790: 1.		
HHFOX44	988904	220	3 - 659	2395		S0212: 20, L0751: 14, L0663: 11, L0731: 11, H0083: 10, L0657: 10, L0666: 10, H0547: 10, H0550: 7, H0620: 6, L0769: 6, H0689: 6, H0123: 5, H0428: 5, L0662: 5, S0356: 4, H0059: 4, L0664: 4, H0520: 4, H0670: 4, L0581: 4, S0418: 3, L0717: 3, H0618: 3, H0494: 3, S0438: 3,	2q33-q34	100730, 118800, 123660, 135600, 157655, 186860, 201460, 205100, 213700, 262000, 600258, 601277, 601318

		L0770: 3, L0659: 3, H0683: 3, H0660: 3, L0747: 3, L0758: 3, S0434: 3, H0543: 3, H0624: 2, H0295: 2, H0341: 2, H0662: 2, S0358: 2, S0360: 2, H0675: 2, S0408: 2, H0251: 2, H0051: 2, H0594: 2, H0687: 2, H0615: 2, H0031: 2, H0413: 2, H0100: 2, L0637: 2, L0648: 2, L0803: 2, L0774: 2, L0783: 2, L0665: 2, S0374: 2, S0126: 2, H0658: 2, H0672: 2, S0378: 2, S0406: 2, L0439: 2, L0605: 2, H0352: 2, H0170: 1, H0686: 1, H0685: 1, H0294: 1, S0180: 1, S0298: 1, H0661: 1, H0664: 1, S0420: 1, S0442: 1, S0354: 1, S0376: 1, H0637: 1, H0329: 1, S0007: 1, H0208: 1, H0645: 1, H0549: 1, H0391: 1, H0392: 1, H0331: 1,			

					H0632: 1, T0109: 1, H0575: 1, H0545: 1, H0009: 1, H0024: 1, H0057: 1, H0373: 1, H0188: 1, H0288: 1, H0286: 1, H0644: 1, H0617: 1, H0606: 1, H0087: 1, L0564: 1, S0440: 1, L0772: 1, L0374: 1, L0794: 1, L0652: 1, L0653: 1, L0809: 1, L0543: 1, H0693: 1, H0593: 1, H0690: 1, H0682: 1, H0684: 1, H0666: 1, S0330: 1, S0380: 1, H0696: 1, H0555: 1, S0027: 1, L0748: 1, L0750: 1, L0779: 1, L0755: 1, L0759: 1, H0445: 1, S0436: 1, L0597: 1, L0599: 1, H0542: 1 and S0384: 1.		
HPWDE54	989029	221	1 - 2127	2396	Met-1 to Ile-6, Cys-13 to Ser-20, Asp-40 to Ser-46, Asp-48 to Ser-62, Ser-70 to Tyr-80, Glu-83 to Ser-89, Leu-108 to Ser-119,	AR055: 8, AR096: 4, AR053: 4, AR104: 3, AR089: 3, AR061: 3, AR039: 3, AR060: 3, AR033: 3, AR052: 1 L0777: 4, H0052: 3, L0438: 2, L0748: 2,		

				Cys-138 to Trp-154, Glu-198 to Val-227, Lys-251 to Asp-264, Asp-407 to Glu-415, Ile-456 to Val-462, Ser-470 to His-476, Phe-478 to Ser-492, Arg-500 to Asp-507, Asn-595 to Ala-603, Leu-638 to Leu-648, Lys-667 to Asn-673, Trp-684 to Ile-691, Ser-698 to Glu-709.	S0212: 1, S0376: 1, H0438: 1, H0318: 1, L0471: 1, H0375: 1, H0038: 1, H0551: 1, L0763: 1, L0764: 1, L0767: 1, L0794: 1, L0775: 1, L0805: 1, L0653: 1, H0648: 1, S0044: 1, L0742: 1, L0439: 1, L0747: 1, L0750: 1, S0031: 1, H0445: 1, L0590: 1 and H0543: 1.		
HNOAX46	989183	222	1 - 789	2397		H0556: 17, H0305: 15, S0414: 14, L0665: 14, H0402: 12, S0360: 11, L0663: 11, L0777: 11, L0766: 9, L0664: 9, L0752: 9, L0362: 9, L0662: 8, L0754: 8, S0408: 7, L0776: 7, L0666: 7, H0648: 7, S0406: 7, L0758: 7, H0422: 7, L0803: 6, L0655: 6, H0696: 6, H0657: 5, H0486: 5, L0770: 5, L0659: 5, H0144: 5, S0328: 5, L0742: 5, L0731: 5, H0423: 5, H0265: 4,		

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HCQCB28	989280	223	408 - 289	2398	His-7 to Lys-14.	L0768: 5, L0766: 3, L0769: 2, L0748: 2, L0750: 2, L0758: 2, H0663: 1, S0420: 1, S0360: 1, H0675: 1, H0486: 1, H0596: 1, H0179: 1, H0328: 1, L0363: 1, L0806: 1, L0809: 1, H0658: 1, L0747: 1, L0777: 1, L0731: 1 and H0352: 1.	

HOOJB32	989321	224	460 - 1173	2399	Ser-75 to Ala-92, Ala-106 to Met-123, Pro-125 to Gln-131, Asp-175 to Asn-182, Val-197 to Arg-224.	L0777: 7, L0766: 5, L0663: 3, H0660: 3, L0752: 3, L0758: 3, H0650: 2, H0124: 2, L0646: 2, L0740: 2, H0445: 2, L0588: 2, L0485: 2, S0424: 2, H0657: 1, H0341: 1, S0358: 1, S0360: 1, S0046: 1, H0385: 1, H0586: 1, L0477: 1, H0004: 1, H0052: 1, H0596: 1, H0373: 1, H0083: 1, H0375: 1, H0376: 1, H0059: 1, H0494: 1, S0150: 1, L0369: 1, L0763: 1, L0764: 1, L0662: 1, L0768: 1, L0803: 1, L0775: 1, L0776: 1, L0659: 1, L0666: 1, L0665: 1, H0144: 1, S0126: 1, H0659: 1, H0648: 1, S0330: 1, S0378: 1, S0152: 1, H0436: 1, S0390: 1, L0581: 1 and H0668: 1.			
HMWJJ35	989323	225	303 - 452	2400		H0171: 1, H0341: 1, L0157: 1, H0083: 1, H0068: 1, H0038: 1,	13q14.3		277900, 600631

						H0616: 1 and L0519: 1.		
HHFIA95	989396	226	105 - 188	2401	Phe-2 to Cys-10.	L0438: 4, L0754: 4, H0521: 3, H0624: 2, S0356: 2, S0132: 2, L0803: 2, L0806: 2, L0439: 2, L0749: 2, L0779: 2, L0759: 2, H0556: 1, H0686: 1, L0002: 1, H0661: 1, S0376: 1, H0580: 1, H0586: 1, H0544: 1, H0050: 1, L0471: 1, H0620: 1, H0373: 1, H0051: 1, H0083: 1, H0594: 1, S6028: 1, S0003: 1, H0622: 1, H0032: 1, H0169: 1, H0040: 1, H0264: 1, H0560: 1, S0422: 1, L0369: 1, L0373: 1, L0646: 1, L0774: 1, L0784: 1, L0653: 1, L0776: 1, L0663: 1, H0593: 1, S0328: 1, H0539: 1, S0027: 1, L0752: 1, L0731: 1, L0605: 1, L0591: 1, L0604: 1 and H0542: 1.		
HSPSH36	989607	227	71 - 259	2402	Pro-26 to Glu-49, Asp-58 to Pro-63.			

HAAAA25	989952	228	1136 - 534	2403	Lys-14 to Glu-23, Glu-30 to Ser-43, Ser-45 to His-54, Thr-66 to Tyr-71, Pro-75 to Asp-80, Ile-98 to Thr-120, Glu-125 to Lys-133, Leu-146 to Ala-152, Ala-170 to Ile-176, Asp-180 to Cys-200.	H0318: 1, H0646: 1 and L0366: 1.	8q24.12-q24.13	133700, 133700, 150230, 190080, 190350
HTEMJ16	990060	229	268 - 645	2404	His-8 to Ser-15, Ser-21 to Gly-32, Arg-51 to Ala-57, Phe-71 to Leu-78, Gly-87 to Glu-92.	L0777: 10, H0616: 4, L0758: 4, L0761: 3, L0766: 3, H0648: 3, L0749: 3, L0750: 3, L0755: 3, H0318: 2, H0545: 2, H0373: 2, H0038: 2, S0438: 2, S0422: 2, L0774: 2, L0375: 2, L0657: 2, L0518: 2, H0659: 2, L0731: 2, L0759: 2, H0685: 1, H0294: 1, H0656: 1, L0808: 1, S0420: 1, H0586: 1, L0622: 1, H0486: 1, T0082: 1, S0010: 1, S0049: 1, L0471: 1, H0615: 1, L0520: 1, L0762: 1, L0763: 1, L0770: 1, L0769: 1,		

					L0372: 1, L0646: 1, L0767: 1, L0768: 1, L0803: 1, L0776: 1, L0658: 1, L0636: 1, L0368: 1, L0666: 1, L0664: 1, L0665: 1, H0682: 1, H0658: 1, H0666: 1, S0330: 1, S0406: 1, S0027: 1, L0747: 1, L0779: 1, L0780: 1, L0753: 1 and L0757: 1.		
HWLAB90	990146	230	2 - 682	2405	Glu-1 to Val-14, Arg-123 to Gly-128.	L0748: 6, L0774: 4, L0439: 4, L0749: 4, L0764: 3, L0771: 3, L0775: 3, L0665: 3, S0408: 2, H0644: 2, L0766: 2, L0649: 2, S0374: 2, L0747: 2, S0282: 1, H0662: 1, S0442: 1, S0354: 1, H0586: 1, H0156: 1, L0021: 1, H0239: 1, H0494: 1, S0440: 1, H0695: 1, L0762: 1, L0761: 1, L0648: 1, L0803: 1, L0804: 1, L0666: 1, L0663: 1, H0689: 1, H0658: 1, H0648: 1, S0380: 1,		

							S0044: 1, L0755: 1, L0758: 1 and H0423: 1.	
HOSED43	990184	231	2 - 790	2406	Gln-81 to Cys-86, Lys-170 to Asp-181.	AR089: 23, AR096: 19, AR039: 16, AR052: 16, AR060: 13, AR033: 11, AR055: 10, AR104: 9, AR053: 4, AR061: 3 H0024: 2, L0594: 2, H0542: 2, H0657: 1, S0214: 1, L0761: 1, L0766: 1, H0435: 1, H0658: 1, S0380: 1, L0753: 1 and L0759: 1.		
HNODF50	990254	232	761 - 165	2407	Gly-1 to Gln-11, Pro-111 to Pro-126, Lys-174 to Ser-179, Leu-181 to Leu-190.	H0617: 10, S0126: 7, S0404: 5, L0747: 5, L0779: 5, H0253: 4, H0545: 4, L0766: 4, S0328: 4, L0742: 4, L0752: 4, H0686: 3, S0420: 3, S0358: 3, S0046: 3, S0278: 3, H0592: 3, H0618: 3, H0100: 3, L0769: 3, H0519: 3, L0743: 3, L0758: 3, H0341: 2, H0484: 2, H0333: 2, H0327: 2, H0544: 2, H0046: 2, H0594: 2, T0042: 2, H0494: 2,		

		S0426: 2, L0763: 2, L0761: 2, L0764: 2, L0519: 2, L0532: 2, L0665: 2, H0435: 2, H0651: 2, S0330: 2, H0539: 2, S0206: 2, L0751: 2, L0755: 2, S0106: 2, H0543: 2, H0422: 2, H0624: 1, H0171: 1, H0657: 1, H0656: 1, S0282: 1, S0029: 1, H0663: 1, H0662: 1, H0459: 1, S0418: 1, S0354: 1, H0393: 1, H0351: 1, S6016: 1, S0220: 1, H0370: 1, H0586: 1, H0497: 1, L0623: 1, T0114: 1, H0069: 1, L0021: 1, H0575: 1, H0052: 1, H0309: 1, H0231: 1, H0546: 1, H0041: 1, H0009: 1, H0050: 1, H0024: 1, L0163: 1, H0510: 1, H0266: 1, H0284: 1, H0286: 1, H0688: 1, H0428: 1, L0194: 1, T0006: 1, H0213: 1, H0553: 1, H0644: 1,			

		H0628: 1, H0181: 1, H0598: 1, S0036: 1, H0040: 1, H0634: 1, H0616: 1, H0087: 1, H0059: 1, T0041: 1, H0561: 1, H0509: 1, H0647: 1, S0144: 1, S0142: 1, H0538: 1, S0002: 1, L0520: 1, L0772: 1, L0643: 1, L0771: 1, L0773: 1, L0662: 1, L0794: 1, L0386: 1, L0774: 1, L0776: 1, L0527: 1, L0657: 1, L0515: 1, L0659: 1, L0517: 1, L0542: 1, L0545: 1, L0666: 1, L0664: 1, H0593: 1, H0689: 1, H0690: 1, H0682: 1, H0659: 1, H0670: 1, H0518: 1, S0146: 1, H0436: 1, H0576: 1, S0390: 1, S0037: 1, S3014: 1, L0748: 1, L0754: 1, L0749: 1, L0753: 1, S0031: 1, H0445: 1, L0596: 1, H0668: 1, H0667: 1, S0242: 1, S0194: 1,			

HLWBV17	990255	233	144 - 542	2408	Pro-46 to Pro-60, Lys-108 to Ser-113, Leu-115 to Leu-124.	H0617: 10, S0126: 7, S0404: 5, L0747: 5, L0779: 5, H0253: 4, H0545: 4, L0766: 4, S0328: 4, L0742: 4, L0752: 4, H0686: 3, S0420: 3, S0358: 3, S0046: 3, S0278: 3, H0592: 3, H0618: 3, H0100: 3, L0769: 3, L0665: 3, H0519: 3, L0743: 3, L0758: 3, H0341: 2, H0484: 2, H0333: 2, H0327: 2, H0544: 2, H0046: 2, H0594: 2, T0042: 2, H0494: 2, S0426: 2, L0763: 2, L0761: 2, L0764: 2, L0519: 2, L0532: 2, H0435: 2, H0651: 2, S0330: 2, H0539: 2, S0206: 2, L0751: 2, L0755: 2, S0106: 2, H0543: 2, H0422: 2, H0624: 1, H0171: 1, H0657: 1, H0656: 1, S0282: 1, S0029: 1, H0663: 1, S0196: 1, H0423: 1 and H0008: 1.		

		H0662: 1, H0459: 1, S0418: 1, S0354: 1, H0393: 1, H0351: 1, S6016: 1, S0220: 1, H0370: 1, H0586: 1, H0497: 1, L0623: 1, T0114: 1, H0069: 1, L0021: 1, H0575: 1, H0052: 1, H0309: 1, H0231: 1, H0546: 1, H0041: 1, H0009: 1, H0050: 1, H0024: 1, L0163: 1, H0510: 1, H0266: 1, H0284: 1, H0286: 1, H0688: 1, H0428: 1, L0194: 1, T0006: 1, H0213: 1, H0553: 1, H0644: 1, H0628: 1, H0181: 1, H0598: 1, S0036: 1, H0040: 1, H0634: 1, H0616: 1, H0087: 1, H0059: 1, T0041: 1, H0561: 1, H0509: 1, H0647: 1, S0144: 1, S0142: 1, H0538: 1, S0002: 1, L0520: 1, L0772: 1, L0643: 1, L0771: 1, L0773: 1, L0662: 1, L0794: 1,			

					L0386: 1, L0774: 1, L0776: 1, L0527: 1, L0657: 1, L0515: 1, L0659: 1, L0517: 1, L0542: 1, L0545: 1, L0666: 1, L0664: 1, H0593: 1, H0689: 1, H0690: 1, H0682: 1, H0659: 1, H0670: 1, H0518: 1, S0146: 1, H0436: 1, H0576: 1, S0390: 1, S0037: 1, S3014: 1, L0748: 1, L0754: 1, L0749: 1, L0753: 1, S0031: 1, H0445: 1, L0596: 1, H0668: 1, H0667: 1, S0242: 1, S0194: 1, S0196: 1, H0423: 1 and H0008: 1.		
HOCQH66	990435	234	37 - 2745	2409	Leu-1 to Gly-8.	S0126: 23, S0212: 16, S0250: 15, S0192: 14, H0622: 12, H0620: 9, H0144: 9, S0040: 7, H0024: 7, H0039: 7, S3014: 7, S0011: 7, H0013: 6, L0565: 6, S0028: 6, H0667: 6, S0194: 6, H0619: 5, H0031: 5, H0628: 5,	2q37	113300, 120070, 120131, 120131, 120250, 138030, 259900, 600430

		H0551: 5, H0624: 4, H0012: 4, S0027: 4, L0747: 4, H0665: 4, H0586: 3, T0039: 3, H0575: 3, H0014: 3, H0252: 3, L0142: 3, H0038: 3, H0616: 3, S0037: 3, L0748: 3, S0298: 2, H0486: 2, H0244: 2, H0427: 2, H0318: 2, H0050: 2, L0471: 2, H0284: 2, H0286: 2, H0328: 2, H0032: 2, H0591: 2, S0390: 2, S0206: 2, S0196: 2, S0462: 2, H0170: 1, H0222: 1, S0430: 1, H0661: 1, S0356: 1, S0354: 1, S0360: 1, H0645: 1, H0393: 1, H0549: 1, H0370: 1, H0485: 1, H0270: 1, H0599: 1, H0042: 1, H0594: 1, S0003: 1, S0022: 1, S0214: 1, L0053: 1, H0030: 1, H0553: 1, H0644: 1, H0124: 1, S0366: 1, H0598: 1, H0090: 1, H0040: 1,				

						H0063: 1, H0647: 1, L0763: 1, L0545: 1, L0789: 1, L0438: 1, H0519: 1, H0682: 1, H0658: 1, H0660: 1, S0332: 1, S0146: 1, S0032: 1, L0439: 1, L0751: 1, L0754: 1, L0750: 1, L0731: 1, S0242: 1, H0008: 1 and H0293: 1.		
HOGDC67	990546	235	1887 - 859	2410	Thr-77 to Val-84, Ser-244 to Val-255, Ala-296 to Val-301.	S0126: 8, S0418: 5, L0439: 5, H0551: 4, L0438: 4, L0747: 4, S0192: 4, H0556: 3, H0046: 3, L0769: 3, L0771: 3, L0662: 3, L0665: 3, L0731: 3, H0265: 2, S0360: 2, S0410: 2, S0046: 2, H0370: 2, H0618: 2, H0284: 2, H0181: 2, H0494: 2, H0560: 2, L0763: 2, L0764: 2, L0649: 2, L0378: 2, L0806: 2, L0547: 2, L0789: 2, L0666: 2, L0663: 2, H0520: 2, H0435: 2, S0152: 2, L0759: 2, L0596: 2,	17	

		L0595: 2, H0624: 1, S0040: 1, S0342: 1, H0657: 1, S0212: 1, S0420: 1, S0045: 1, H0441: 1, H0497: 1, H0333: 1, H0559: 1, H0486: 1, T0109: 1, H0253: 1, H0309: 1, H0545: 1, H0123: 1, H0081: 1, H0024: 1, S0388: 1, T0010: 1, H0594: 1, H0266: 1, H0292: 1, H0286: 1, H0252: 1, H0615: 1, H0039: 1, H0048: 1, H0644: 1, H0617: 1, H0598: 1, H0135: 1, H0063: 1, H0164: 1, H0433: 1, H0625: 1, H0561: 1, L0065: 1, H0131: 1, S0150: 1, H0633: 1, H0538: 1, S0208: 1, H0529: 1, L0770: 1, L0637: 1, L0800: 1, L0374: 1, L0644: 1, L0363: 1, L0794: 1, L0766: 1, L0388: 1, L0533: 1, L0804: 1, L0650: 1, L0540: 1, L0809: 1,			

HCDBO02	990609	236	4088 - 831	2411		H0547: 1, H0593: 1, H0659: 1, H0660: 1, S0044: 1, H0478: 1, S3014: 1, S0032: 1, L0750: 1, L0777: 1, L0758: 1, S0031: 1, H0653: 1 and H0667: 1.	12q14	123829, 147570, 181430, 252940, 264700, 600808, 601284, 601769, 601769, 602116
						L0794: 15, L0766: 12, L0439: 9, H0547: 7, H0520: 6, H0435: 5, S0440: 4, S0422: 4, L0664: 4, L0756: 4, S0376: 3, H0251: 3, H0529: 3, L0659: 3, L0755: 3, S0026: 3, H0657: 2, S0418: 2, S0444: 2, L0646: 2, L0768: 2, L0789: 2, H0519: 2, H0672: 2, H0555: 2, L0754: 2, L0747: 2, L0779: 2, L0777: 2, L0731: 2, L0759: 2, L0589: 2, L0581: 2, L0608: 2, L0593: 2, H0542: 2, H0423: 2, H0422: 2, T0002: 1, S0040: 1, H0717: 1, H0650: 1, H0662: 1, S0420: 1, H0580: 1, H0729: 1,		

						H0229: 1, L0717: 1, H0497: 1, H0486: 1, H0244: 1, H0318: 1, H0581: 1, H0596: 1, L0041: 1, H0009: 1, H0563: 1, H0572: 1, L0471: 1, H0266: 1, S0214: 1, H0252: 1, H0039: 1, L0055: 1, S0036: 1, H0090: 1, H0412: 1, H0623: 1, H0059: 1, S0038: 1, H0494: 1, S0150: 1, L0637: 1, L0641: 1, L0764: 1, L0771: 1, L0803: 1, L0804: 1, L0775: 1, L0375: 1, L0657: 1, L0518: 1, L0809: 1, L5623: 1, L0666: 1, H0144: 1, H0701: 1, H0711: 1, H0659: 1, H0670: 1, H0660: 1, H0648: 1, L0602: 1, S0028: 1, L0744: 1, L0748: 1, L0780: 1, S0436: 1, L0591: 1, L0594: 1, L0366: 1 and H0665: 1.		
HODGN92	990611	237	101 - 505	2412		H0615: 1 and H0660: 1.		

HPDRP30	990751	238	1166 - 2098	2413	Gln-1 to Pro-11, Val-15 to Arg-23, Arg-44 to Arg-59, Thr-70 to Gln-75, Ala-153 to Gln-168, Pro-187 to Pro-194, Pro-204 to Asp-214.	H0618: 12, H0253: 4, L0771: 4, S0358: 2, H0688: 2, H0658: 2, H0651: 2, L0439: 2, L0777: 2, H0445: 2, S6024: 1, H0484: 1, S0420: 1, S0376: 1, H0619: 1, H0609: 1, H0586: 1, H0642: 1, H0427: 1, H0196: 1, H0309: 1, H0546: 1, H0009: 1, H0123: 1, H0292: 1, H0553: 1, H0617: 1, H0551: 1, H0264: 1, S0440: 1, H0646: 1, L0372: 1, L0646: 1, L0803: 1, L0658: 1, L0659: 1, L0783: 1, L0788: 1, L0438: 1, H0690: 1, H0660: 1, H0648: 1, H0479: 1, L0744: 1, L0779: 1, L0758: 1, S0436: 1, H0542: 1 and H0423: 1.		
HBXFN09	990769	239	95 - 145	2414		H0438: 1 and L0749: 1.		
HDTBO75	990913	240	184 - 324	2415			1p22.1-p21.3	170995, 600309, 601414,

									602094	
HELGN26	991014	241	3 - 902	2416	Arg-1 to Asn-18.	S0045: 1				
HODCU15	991048	242	828 - 1592	2417	Thr-57 to Glu-63, Ala-66 to Val-75, Glu-77 to Phe-86, Asp-199 to Gly-211.	AR055: 1, AR096: 1, AR089: 1, AR060: 1, AR104: 1, AR039: 1, AR061: 1, AR053: 1, AR033: 0, AR052: 0 S0418: 1, H0328: 1 and L0758: 1.				
HOGDI51	991268	243	1 - 543	2418	Phe-102 to Pro-111, His-136 to Lys-141.	H0038: 1, H0435: 1 and L0592: 1.	9q34	125270, 125270, 128100, 137350, 191100, 215700, 223360, 268900, 601850		
HLWAF02	991516	244	156 - 449	2419	Arg-1 to Ser-6, Phe-13 to Gln-24, Glu-31 to Arg-40, Ser-48 to Asn-56, Asp-69 to Val-75.	H0553: 1 and L0758: 1.	2q			
HRKPA16	991654	245	296 - 502	2420	Asn-47 to Phe-58.	L0748: 3, L0759: 3, H0366: 2, L0666: 2, L0665: 2, L0602: 2, S0136: 2, L0751: 2, L0779: 2, S0442: 1, L0717: 1, L0738: 1, T0010: 1, S0003: 1,				

					H0622: 1, H0673: 1, H0674: 1, H0388: 1, H0412: 1, T0041: 1, S0422: 1, S0426: 1, L0638: 1, L0662: 1, L0768: 1, L0766: 1, L0775: 1, L0805: 1, L0655: 1, L0657: 1, L0512: 1, L0659: 1, L0663: 1, L0664: 1, H0670: 1, S0406: 1, H0678: 1, L0745: 1, L0756: 1, L0752: 1, S0436: 1, L0581: 1 and L0601: 1.			
HPDQX94	991761	246	90 - 650	2421	Asp-15 to Ser-25, Ser-33 to Val-38, Lys-181 to Phe-187.	L0747: 11, L0770: 6, S0404: 6, L0752: 6, L0748: 5, L0776: 4, L0755: 4, L0731: 4, L0759: 4, S0442: 3, H0722: 3, S0438: 3, L0775: 3, L0375: 3, L0779: 3, T0049: 2, S0358: 2, H0730: 2, H0586: 2, T0048: 2, L0766: 2, H0690: 2, H0658: 2, L0750: 2, S0412: 2, H0713: 1, H0662: 1, S0354: 1, S0376: 1, S0360: 1,	4q28-q31	107250, 134820, 134820, 134820, 134830, 134850, 134850, 181600, 189800, 266300

					S0410: 1, H0741: 1, H0645: 1, H0438: 1, H0497: 1, H0643: 1, H0632: 1, L0622: 1, H0575: 1, H0231: 1, H0009: 1, H0081: 1, H0014: 1, H0373: 1, S0366: 1, H0063: 1, S0440: 1, L0772: 1, L0764: 1, L0526: 1, L0541: 1, S0374: 1, S0148: 1, H0593: 1, S0126: 1, H0666: 1, S0328: 1, H0710: 1, H0522: 1, H0696: 1, S0206: 1, L0740: 1, L0749: 1, L0753: 1, L0758: 1, H0445: 1, S0434: 1, S0436: 1, S0026: 1 and H0721: 1.		109543, 600631, 601499
HEAAY09	992678	247	40 - 390	2422		H0369: 1 and H0529: 1.	13q14	
HPDRH78	992780	248	115 - 1371	2423		H0038: 6, L0663: 4, L0601: 4, S0442: 3, L0157: 3, L0770: 3, L0665: 3, S0436: 3, H0341: 2, H0125: 2, H0360: 2, H0318: 2, H0328: 2, H0615: 2,		

		T0023: 2, H0561: 2, S0440: 2, L0766: 2, L0809: 2, H0547: 2, H0519: 2, S0126: 2, H0659: 2, H0672: 2, S0330: 2, L0754: 2, L0745: 2, L0750: 2, H0506: 2, H0265: 1, H0556: 1, S0040: 1, H0717: 1, H0294: 1, H0583: 1, H0657: 1, L0785: 1, H0669: 1, S0420: 1, L0005: 1, S0376: 1, H0619: 1, H0351: 1, S0222: 1, S0220: 1, H0431: 1, T0039: 1, H0618: 1, T0110: 1, H0570: 1, H0569: 1, L0471: 1, H0292: 1, H0031: 1, L0055: 1, H0166: 1, H0169: 1, H0068: 1, S0036: 1, H0163: 1, H0359: 1, S0450: 1, H0647: 1, H0646: 1, S0344: 1, L0638: 1, L0372: 1, L0641: 1, L0643: 1, L0662: 1, L0768: 1, L0775: 1, L0653: 1, L0776: 1,			

					L0512: 1, L0783: 1, L0382: 1, L0532: 1, L0666: 1, S0374: 1, L0438: 1, H0520: 1, H0593: 1, H0690: 1, H0682: 1, H0658: 1, S0380: 1, S0044: 1, S0146: 1, S0406: 1, S3012: 1, S0027: 1, S0028: 1, L0746: 1, L0777: 1, L0731: 1, S0031: 1, S0434: 1, L0599: 1, H0668: 1, H0665: 1, S0276: 1, H0423: 1, S0424: 1, UNKWN: 1 and L0600: 1.	
HLMHG68	992900	249	19 - 774	2424	Gln-2 to Ala-8, Asn-18 to Pro-28, Ala-129 to Asp-135, Ser-161 to Ser-171, Val-242 to Arg-250.	AR055: 28, AR039: 26, AR060: 21, AR033: 20, AR052: 17, AR089: 16, AR096: 16, AR104: 15, AR053: 15, AR061: 11 L0751: 6, L0783: 4, H0672: 4, L0805: 2, L0752: 2, L0758: 2, H0657: 1, H0255: 1, H0638: 1, S0418: 1, S0442: 1, H0351: 1, H0587: 1, H0256: 1,	

					L0623: 1, H0014: 1, H0051: 1, S0388: 1, H0688: 1, H0428: 1, H0424: 1, H0213: 1, H0401: 1, H0111: 1, H0617: 1, H0163: 1, H0063: 1, H0551: 1, T0041: 1, S0002: 1, L0764: 1, L0648: 1, L0662: 1, L0650: 1, L0774: 1, L0523: 1, L0378: 1, L0655: 1, L4501: 1, H0690: 1, H0659: 1, H0658: 1, H0521: 1, H0436: 1, L0777: 1 and L0601: 1.		
HODFO57	992973	250	2 - 811	2425	Trp-31 to Thr-39, Asn-71 to Gln-76, Pro-134 to Thr-150, Lys-238 to Lys-243.		
HOCPZ44	993380	251	139 - 540	2426	Arg-1 to Glu-6, Arg-52 to Ala-58, Phe-72 to Leu-79, Gly-88 to Glu-93, Tyr-124 to Arg-134.	L0518: 4, S0356: 3, H0617: 3, L0777: 3, H0486: 2, H0544: 2, H0545: 2, H0373: 2, H0547: 2, H0660: 2, L0757: 2, L0604: 2, H0423: 2, H0656: 1, H0341: 1, H0484: 1, H0483: 1, H0661: 1, S0360: 1, S0045: 1,		

					S0132: 1, S0300: 1, H0411: 1, H0438: 1, H0586: 1, H0574: 1, T0109: 1, H0156: 1, H0318: 1, H0251: 1, H0014: 1, T0079: 1, H0615: 1, T0023: 1, H0674: 1, S0036: 1, H0038: 1, H0040: 1, H0616: 1, T0067: 1, T0042: 1, L0475: 1, S0422: 1, H0529: 1, H0520: 1, H0682: 1, L0740: 1, L0749: 1, L0758: 1, L0759: 1, L0588: 1, L0362: 1, S0276: 1, S0196: 1, H0543: 1 and H0506: 1.	
HPAMU38	993403	252	69 - 821	2427	Gly-23 to Lys-28, Ser-37 to Gly-42, Lys-90 to Asp-101, Glu-175 to Phe-182, Glu-245 to Thr-251.	L0439: 8, L0774: 4, L0731: 4, H0622: 3, H0617: 3, S0002: 3, L0662: 3, L0438: 3, L0777: 3, S0134: 2, L0717: 2, H0370: 2, H0052: 2, H0596: 2, L0163: 2, H0163: 2, L0769: 2, L0768: 2, L0766: 2, L0666: 2, H0682: 2, L0740: 2, L0752: 2, L0757: 2,	

						L0759: 2, L0605: 2, S0040: 1, H0583: 1, S0001: 1, S0282: 1, H0255: 1, H0669: 1, H0662: 1, S0354: 1, S0278: 1, S6022: 1, H0549: 1, S6014: 1, H0438: 1, H0427: 1, H0618: 1, S0010: 1, S0049: 1, H0150: 1, H0009: 1, H0050: 1, H0012: 1, H0620: 1, H0057: 1, S0388: 1, H0252: 1, T0067: 1, H0488: 1, H0646: 1, S0142: 1, L0770: 1, L0761: 1, L0648: 1, L0649: 1, L0803: 1, L0375: 1, L0776: 1, L0659: 1, L0783: 1, L0665: 1, H0144: 1, H0519: 1, H0593: 1, H0690: 1, H0518: 1, L0611: 1, S3012: 1, L0754: 1, L0747: 1, L0755: 1, L0758: 1, H0653: 1, H0665: 1, S0276: 1 and H0422: 1.		
HNGGK47	993602	253	265 - 372	2428	Trp-26 to Lys-36.	AR055: 8, AR033: 6, AR089: 6, AR060: 6,		

						AR104: 5, AR039: 5, AR096: 4, AR061: 4, AR053: 4, AR052: 4 L0522: 3, L0748: 2, H0171: 1, H0686: 1, L0034: 1, H0615: 1, L0764: 1, L0794: 1, S0052: 1, S0374: 1 and L0601: 1.		
HODGN51	993754	254	94 - 342	2429	Lys-12 to Ser-18, Lys-20 to Lys-25, Thr-38 to His-43, Lys-53 to Cys-64.	H0615: 3		
HODCT60	993806	255	212 - 559	2430	Ile-7 to Trp-17, Asn-54 to Lys-64, Thr-85 to Met-91.	S0001: 1, H0328: 1 and H0615: 1.		
HAQBV81	993918	256	3 - 623	2431	Gln-1 to Arg-7, Gly-18 to Thr-24, Glu-26 to Glu-32, His-76 to Thr-88, Gln-122 to His-129, Pro-184 to Glu-190.	L0809: 7, L0758: 7, L0754: 5, S0007: 4, L0662: 4, L0794: 4, L0665: 4, H0333: 3, L0769: 3, L0761: 3, L0768: 3, L0803: 3, L0439: 3, H0395: 2, S0222: 2, H0039: 2, H0124: 2, S0036: 2, L0535: 2, L0666: 2, H0658: 2, L0751: 2, L0747: 2, L0759: 2, L0591: 2, L0485: 2, H0624: 1, H0716: 1,		

					H0295: 1, H0402: 1, S0418: 1, S0442: 1, S0132: 1, H0619: 1, H0415: 1, H0586: 1, L0623: 1, H0486: 1, H0013: 1, S0280: 1, L0021: 1, H0618: 1, H0318: 1, H0052: 1, H0251: 1, H0123: 1, H0050: 1, H0012: 1, S0051: 1, H0179: 1, H0615: 1, T0006: 1, H0673: 1, H0135: 1, H0040: 1, H0087: 1, H0264: 1, H0100: 1, L0763: 1, L5565: 1, L0667: 1, L0772: 1, L0644: 1, L0775: 1, L0375: 1, L0805: 1, L0655: 1, L0659: 1, L0526: 1, L0663: 1, S0052: 1, H0682: 1, H0660: 1, S0028: 1, L0743: 1, L0750: 1, L0756: 1, L0779: 1, L0777: 1, L0755: 1, L0592: 1, H0136: 1 and S0424: 1.		
HDTGF49	993931	257	1040 - 1174	2432		H0486: 2, H0171: 1, H0657: 1, S0360: 1,		

HOGBN62	994134	258	152 - 448	2433	Phe-12 to Tyr-22, Lys-34 to Ile-44.	L0794: 6, L0438: 4, L0758: 4, H0656: 3, L0766: 3, L0748: 3, L0747: 3, L0753: 3, L0731: 3, H0662: 2, H0013: 2, H0529: 2, L0655: 2, H0659: 2, L0439: 2, L0751: 2, L0779: 2, L0588: 2, H0422: 2, L0785: 1, S0420: 1, H0599: 1, S0010: 1, H0327: 1, H0024: 1, H0051: 1, H0083: 1, L0194: 1, L0055: 1, H0673: 1, H0038: 1, H0551: 1, H0561: 1, S0002: 1, L0770: 1, L0761: 1, L0764: 1, L0768: 1, L0774: 1, L0775: 1, L0806: 1, L0659: 1, L0519: 1, L0666: 1, S0126: 1, H0435: 1, S0330: 1, S0380: 1, S3014: 1, S0260: 1, L0592: 1, L0485: 1 and L0362: 1.	H0587: 1, H0013: 1, H0318: 1, H0688: 1, L0793: 1 and L0748: 1.		

HSKGR42	994234	259	126 - 410	2434	Asp-8 to Glu-16, Thr-24 to Lys-35, Asn-37 to Glu-44, Leu-65 to Asp-95.	H0519: 1 and S3014: 1.		
HOEBQ85	994356	260	1065 - 706	2435		L0747: 4, L0758: 3, L0794: 2, L0649: 2, L0749: 2, L0759: 2, H0624: 1, H0333: 1, L0598: 1, L0773: 1, L0661: 1, L4501: 1, S0126: 1, H0682: 1, S0328: 1, H0521: 1, L0748: 1, L0750: 1, L0780: 1, L0755: 1 and S0436: 1.		
HOPJG01	994536	261	1390 - 257	2436	Ala-41 to Ser-46, Gly-57 to Gly-62, Glu-91 to Asn-111, Gln-113 to Pro-120, Val-128 to Ser-133, His-142 to Arg-149, Thr-177 to Leu-184, Arg-206 to Ile-214, Phe-261 to Trp-270, Asn-298 to Phe-305, Gln-315 to Gly-320.	H0052: 25, T0006: 15, L0596: 12, S0222: 11, H0009: 10, L0753: 10, H0441: 9, L0439: 9, L0752: 9, S0358: 8, H0253: 8, H0618: 7, H0231: 7, L0769: 7, H0144: 7, S0374: 7, H0550: 6, L0775: 6, L0745: 6, L0747: 6, S6024: 5, H0597: 5, H0178: 5, S0388: 5, S0051: 5, H0399: 5, L0750: 5, L0731: 5, S0007: 4, H0351: 4,	14q32	123270, 245200, 251600, 270100, 276900

		S0049: 4, H0204: 4, H0100: 4, L0509: 4, L0542: 4, L0783: 4, L0742: 4, L0746: 4, L0777: 4, L0366: 4, S0300: 3, H0261: 3, H0549: 3, H0497: 3, H0156: 3, S0010: 3, H0085: 3, N0006: 3, S0003: 3, S0036: 3, H0641: 3, L0770: 3, L0499: 3, L0776: 3, L0659: 3, L0665: 3, H0519: 3, H0684: 3, L0756: 3, L0758: 3, L0608: 3, S0424: 3, H0506: 3, H0624: 2, H0170: 2, S6026: 2, H0592: 2, S0346: 2, H0196: 2, H0235: 2, H0596: 2, H0150: 2, H0103: 2, S0050: 2, H0201: 2, T0010: 2, H0213: 2, H0674: 2, L0455: 2, H0038: 2, L0764: 2, L0766: 2, L0375: 2, L0782: 2, L0528: 2, L0666: 2, L0438: 2, H0520: 2, H0672: 2, S0044: 2,				

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				2437	Asn-1 to Arg-7, Ser-26 to Arg-31, Gln-36 to Trp-41, Pro-59 to Lys-66.			
HKBAK06	994596	262	213 - 410					

		S0026: 4, H0663: 3, H0413: 3, S0276: 3, H0685: 2, H0650: 2, H0393: 2, S0278: 2, H0392: 2, H0486: 2, H0535: 2, H0412: 2, S0440: 2, L0646: 2, L0764: 2, L0662: 2, L0768: 2, L0774: 2, L0793: 2, H0144: 2, S0374: 2, H0659: 2, S0152: 2, H0134: 2, L0743: 2, L0744: 2, L0588: 2, H0624: 1, H0265: 1, S0040: 1, S0358: 1, S0408: 1, S0045: 1, H0333: 1, H0250: 1, H0427: 1, H0041: 1, H0050: 1, L0471: 1, H0266: 1, H0328: 1, H0615: 1, H0031: 1, H0606: 1, H0212: 1, H0038: 1, H0634: 1, H0551: 1, H0488: 1, H0560: 1, H0625: 1, H0633: 1, H0647: 1, H0646: 1, S0422: 1, H0529: 1, L0762: 1, L0772: 1, L0643: 1, L0773: 1,				

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						12q24.1	
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					Pro-1 to Ser-8.		
			2438				
			1016 - 486				
			263				
			994664				
			HKGCN61				

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			2439				
			2 - 289				
		264					
	994699						
HTXDY55							

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HFOYI37	994776	265	19 - 513	2440	Gly-18 to Gly-28, Arg-30 to Lys-51, Ala-81 to Ala-87, Lys-157 to Ser-165.	S0212: 2, S0360: 2, S0276: 2, H0218: 1, H0125: 1, H0587: 1, H0497: 1, H0581: 1, H0251: 1, H0354: 1, H0428: 1, H0413: 1, L0526: 1, H0522: 1, H0627: 1, S0192: 1 and S0194: 1.	5q		

HOFNL18	994874	266	1 - 405	2441	Ser-26 to Pro-33.	AR039: 15, AR089: 8, AR033: 8, AR096: 8, AR053: 7, AR052: 7, AR060: 5, AR055: 5, AR104: 5, AR061: 3 H0415: 1 and H0414: 1.		
HOFNT57	994954	267	3 - 1175	2442	Asp-1 to Gly-15.			
HCBMT45	994993	268	1670 - 360	2443	Ser-157 to Asn-167, Asn-192 to Lys-198.	L0731: 8, L0757: 6, L0794: 5, L0809: 5, L0770: 3, L0803: 3, L0789: 3, L0750: 3, L0759: 3, H0038: 2, L0769: 2, L0805: 2, L0659: 2, L0665: 2, S0037: 2, L0742: 2, L0743: 2, L0748: 2, L0754: 2, L0747: 2, L0758: 2, S0436: 2, L0599: 2, L0608: 2, H0624: 1, H0661: 1, H0638: 1, S0358: 1, H0728: 1, H0733: 1, H0586: 1, H0587: 1, H0642: 1, S0010: 1, H0052: 1, H0544: 1, H0046: 1, L0471: 1, H0083: 1, H0179: 1, H0252: 1, H0688: 1, H0617: 1, H0606: 1,		

					H0673: 1, H0135: 1, H0264: 1, H0059: 1, H0560: 1, S0440: 1, S0150: 1, H0633: 1, S0344: 1, S0002: 1, L3904: 1, L0800: 1, L0773: 1, L0804: 1, L0774: 1, L0775: 1, L0806: 1, H0144: 1, L0438: 1, H0519: 1, H0684: 1, H0435: 1, H0651: 1, H0521: 1, L0740: 1, L0749: 1, L0752: 1, H0595: 1, S0434: 1 and H0542: 1.		
HATDZ56	995200	269	120 - 1154	2444	Thr-23 to Pro-34, Glu-39 to Asp-83, Asn-89 to Lys-99, Asp-118 to Asp-128, Asn-135 to Glu-150, Glu-153 to Gly-168, Gly-181 to Thr-187, Arg-200 to Asp-205, Arg-273 to Ile-279, Thr-295 to Asp-300, Thr-316 to Cys-321.	L0438: 2, H0156: 1, H0004: 1, L0748: 1 and L0749: 1.		
HOCQI44	995229	270	2 - 520	2445	Ser-14 to Ala-21, Pro-80 to Tyr-85, Pro-99 to Gly-105,	L0771: 6, L0794: 4, L0748: 4, H0659: 3, L0749: 3, H0624: 2,	20	

					Lys-158 to Pro-173.	H0663: 2, S0360: 2, L0769: 2, L0764: 2, H0660: 2, L0779: 2, L0608: 2, L0601: 2, S0026: 2, S0418: 1, S0410: 1, H0393: 1, L0579: 1, L0471: 1, H0266: 1, H0252: 1, H0673: 1, H0090: 1, H0038: 1, H0087: 1, H0413: 1, H0538: 1, H0695: 1, L0761: 1, L0642: 1, L0648: 1, L0768: 1, L0766: 1, L0381: 1, L0775: 1, L0376: 1, L0378: 1, L0806: 1, L0657: 1, L0658: 1, L0788: 1, L0663: 1, H0690: 1, H0682: 1, H0631: 1, L0751: 1, L0754: 1, L0747: 1, L0758: 1, L0759: 1 and H0543: 1.
HNOJG43	995562	271	1 - 1002	2446		S0440: 4, H0543: 4, H0656: 3, H0539: 3, H0521: 3, H0650: 2, H0341: 2, H0620: 2, H0355: 2, H0068: 2, T0041: 2, H0529: 2, L0439: 2, H0171: 1,	

						S0114: 1, H0657: 1, S0356: 1, S0442: 1, S0354: 1, S0410: 1, H0580: 1, H0728: 1, S0046: 1, S0132: 1, S0476: 1, S0222: 1, H0610: 1, H0613: 1, H0600: 1, H0587: 1, H0013: 1, H0505: 1, H0318: 1, H0309: 1, H0046: 1, H0009: 1, L0471: 1, S0051: 1, H0356: 1, H0510: 1, S6028: 1, H0687: 1, H0292: 1, H0428: 1, H0708: 1, H0494: 1, H0560: 1, S0294: 1, S0210: 1, L0517: 1, L0647: 1, H0726: 1, H0547: 1, H0658: 1, H0670: 1, H0518: 1, S0152: 1, H0522: 1, S0044: 1, H0555: 1, S3014: 1, S0027: 1, L0753: 1, L0731: 1, L0362: 1, H0542: 1, H0423: 1 and H0506: 1.		
HSPSB95	995590	272	2 - 838	2447	Pro-57 to Pro-64, Leu-137 to Ala-147, Ser-158 to Met-163,	L0755: 16, L0754: 14, L0591: 11, S0408: 9, H0441: 9, L0748: 9,		

					Arg-239 to Phe-247, Leu-263 to Asn-268.	H0657: 7, L0776: 7, L0747: 7, H0135: 6, H0494: 6, L0649: 6, H0547: 6, L0439: 6, L0752: 6, L0758: 6, H0341: 5, H0046: 5, L0769: 5, L0771: 5, H0519: 5, L0731: 5, H0543: 5, S0134: 4, S0358: 4, S0360: 4, H0486: 4, H0083: 4, H0509: 4, L0774: 4, L0655: 4, L0438: 4, H0520: 4, L0777: 4, L0757: 4, H0265: 3, H0580: 3, S0132: 3, H0575: 3, H0581: 3, H0052: 3, L0471: 3, H0266: 3, H0687: 3, H0428: 3, H0551: 3, H0529: 3, L0517: 3, L0519: 3, L0666: 3, H0593: 3, H0658: 3, H0648: 3, H0521: 3, S0028: 3, L0742: 3, L0749: 3, L0597: 3, L0588: 3, L0589: 3, L0592: 3, L0485: 3, L0600: 3, H0624: 2, H0170: 2, S0418: 2,		

		S0420: 2, S0356: 2, S0444: 2, H0208: 2, S0045: 2, H0619: 2, H0393: 2, L0717: 2, H0586: 2, H0492: 2, H0427: 2, H0318: 2, S0049: 2, H0251: 2, H0050: 2, H0242: 2, H0288: 2, S0214: 2, H0615: 2, H0622: 2, H0031: 2, H0644: 2, H0628: 2, H0087: 2, H0413: 2, H0056: 2, S0438: 2, S0440: 2, S0150: 2, H0641: 2, S0344: 2, S0422: 2, L0764: 2, L0766: 2, L0653: 2, L0659: 2, L0665: 2, H0144: 2, H0691: 2, H0689: 2, H0711: 2, H0659: 2, H0660: 2, H0672: 2, H0710: 2, S0044: 2, S0406: 2, L0744: 2, L0740: 2, L0750: 2, L0780: 2, L0753: 2, H0445: 2, L0596: 2, L0605: 2, L0581: 2, L0599: 2, L0594: 2, L0595: 2, L0362: 2,				

		L0603: 2, H0136: 2, H0423: 2, H0422: 2, H0293: 2, H0171: 1, T0002: 1, H0222: 1, H0159: 1, H0685: 1, H0295: 1, H0294: 1, L0785: 1, H0661: 1, H0663: 1, S0376: 1, H0340: 1, H0351: 1, S0222: 1, H0392: 1, H0497: 1, H0574: 1, H0013: 1, H0250: 1, H0156: 1, H0599: 1, H0042: 1, T0082: 1, S0010: 1, H0263: 1, T0115: 1, T0110: 1, H0546: 1, H0545: 1, H0019: 1, H0012: 1, H0047: 1, H0197: 1, H0023: 1, H0020: 1, H0107: 1, T0010: 1, H0510: 1, S0250: 1, S0022: 1, H0328: 1, L0194: 1, T0006: 1, H0553: 1, L0055: 1, H0674: 1, L0456: 1, H0708: 1, H0068: 1, H0376: 1, H0163: 1, H0040: 1, H0634: 1, T0067: 1, H0487: 1,			

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HCORG29	995806	273	1475 - 714	2448	Gly-1 to Ala-15, Ala-38 to Asp-46, Thr-56 to Leu-63, Glu-77 to Gly-83, Ile-102 to Gly-111, Pro-120 to Gly-128, Pro-130 to Asp-143, Lys-197 to Ser-211, Pro-217 to Tyr-247.	H0444: 1, L0681: 1, S0011: 1, S0192: 1, S0276: 1 and H0542: 1.	H0556: 4, S0027: 4, S0358: 3, H0318: 3, H0545: 3, L0776: 3, S0380: 3, L0439: 3, L0747: 3, H0265: 2, H0341: 2, H0661: 2, S0045: 2, H0351: 2, H0012: 2, H0039: 2, L0766: 2, S0374: 2, S0126: 2, S0330: 2, S0152: 2, S3014: 2, S0206: 2, L0748: 2, L0740: 2, L0749: 2, L0755: 2, H0423: 2, H0624: 1, L0615: 1, S0040: 1, H0294: 1, H0650: 1, H0657: 1, H0656: 1, H0484: 1, H0483: 1, H0255: 1, H0663: 1, S0418: 1, S0420: 1, S0356: 1, S0442: 1, S0360: 1, H0637: 1, H0580: 1, S0046: 1, S0132: 1, H0586: 1, H0486: 1, H0013: 1, H0042: 1, H0052: 1, H0596: 1,		

HCRNO02	995894	274	537 - 319	2449	Phe-3 to Ala-9.	S0356: 1 and L0780: 1.	8q21	124080, 202010, 202010, 214400, 602476, 602667

H0327: 1, S0388: 1, H0275: 1, H0083: 1, S0022: 1, S0214: 1, H0252: 1, H0604: 1, H0031: 1, H0628: 1, H0673: 1, H0135: 1, H0090: 1, H0591: 1, H0616: 1, H0551: 1, H0264: 1, H0623: 1, H0059: 1, H0494: 1, L0475: 1, H0561: 1, H0131: 1, S0344: 1, L0770: 1, L0769: 1, L0772: 1, L0804: 1, L0774: 1, L0655: 1, L0532: 1, H0144: 1, H0593: 1, H0659: 1, H0670: 1, H0704: 1, H0215: 1, S0406: 1, L0745: 1, L0596: 1, L0588: 1, S0026: 1, H0136: 1, S0276: 1, H0542: 1, H0543: 1 and S0460: 1.

HCBOI79	996247	275	42 - 701	2450	Pro-9 to Gln-15, Glu-37 to Ala-49, Glu-70 to Leu-78, Thr-99 to Thr-122, Leu-144 to Gln-150, Gln-161 to Arg-167.	H0670: 3, H0624: 1, H0661: 1, S0354: 1, S0360: 1, S0278: 1, H0559: 1, H0150: 1, H0024: 1, H0510: 1, H0551: 1, H0413: 1, S0328: 1, H0555: 1 and L0759: 1.		
HVCAB73	996337	276	84 - 1259	2451	Arg-4 to Gly-24, Lys-47 to Phe-55, Lys-61 to Ala-67, Gly-108 to Thr-114, Pro-184 to Pro-191, Pro-292 to Arg-299, Pro-355 to Glu-392.	H0046: 22, H0547: 15, L0748: 13, S0152: 9, H0013: 7, H0009: 7, H0031: 7, H0529: 7, H0519: 7, L0471: 6, H0024: 6, H0266: 6, H0090: 6, H0520: 6, H0542: 6, H0543: 6, H0521: 5, L0439: 5, H0422: 5, S0420: 4, H0373: 4, H0040: 4, H0494: 4, H0561: 4, L0747: 4, L0592: 4, L0593: 4, L0595: 4, S0026: 4, H0423: 4, H0556: 3, H0657: 3, H0656: 3, L0005: 3, S0354: 3, S0408: 3, H0580: 3, S0045: 3, S0046: 3, S0132: 3, S0278: 3, H0586: 3, T0110: 3, H0620: 3,		

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HSDJH04	996619	277	114 - 419	2452	Arg-1 to Ser-20.	L0731: 3, H0632: 1, H0052: 1, H0628: 1, L0766: 1, L0636: 1, L0545: 1, L0543: 1, H0658: 1, L0740: 1, L0750: 1, L0752: 1, S0260: 1 and H0293: 1.	11p15	
HSOAN18	996804	278	630 - 409	2453	Val-1 to Asn-6.	L0755: 3, L0766: 2, L0794: 1, L0759: 1 and H0343: 1.		
HHEHF49	996874	279	698 - 222	2454		H0684: 38, H0703: 27, H0685: 23, H0717: 21,		

					H0688: 21, H0687: 19, H0542: 19, H0722: 15, H0699: 14, H0716: 12, H0725: 9, H0494: 8, H0696: 7, H0689: 5, H0555: 5, H0708: 4, H0545: 3, H0695: 3, H0723: 3, H0724: 3, H0683: 3, H0521: 3, H0686: 2, H0713: 2, H0580: 2, H0546: 2, H0509: 2, H0593: 2, H0710: 2, H0709: 2, H0543: 2, H0712: 2, H0650: 1, H0675: 1, H0602: 1, H0586: 1, H0510: 1, H0488: 1, H0560: 1, S0422: 1, H0698: 1, H0691: 1, H0690: 1, H0682: 1, H0694: 1 and S0424: 1.	19q13.1-q13.2	107741, 113900, 122720, 122720, 126340, 126391, 160900, 164731, 172400,
HCHCF36	996903	280	10 - 711	2455	Lys-43 to Tyr-48, Arg-73 to Arg-79, Pro-183 to Gly-188, Pro-192 to Ser-201.	L0769: 6, L0747: 5, H0619: 2, L0761: 2, L0794: 2, L0803: 2, L0659: 2, L0809: 2, L0744: 2, L0745: 2, H0583: 1, H0483: 1, H0580: 1, H0592: 1, H0581: 1, H0052: 1, H0264: 1, H0561: 1,		

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HAHCK58	997127	281	1 - 228	2456	Glu-1 to Thr-9, Asn-17 to Ser-34.	L0748: 16, S0007: 7, H0360: 7, H0046: 6, L0803: 5, L0747: 5, L0771: 4, L0794: 4, L0731: 4, H0486: 3, L0666: 3, L0663: 3, L0665: 3, L0439: 3, L0758: 3, H0637: 2, H0261: 2, S0222: 2, H0052: 2, S0051: 2, H0622: 2, H0169: 2, L0598: 2, L0637: 2, H0144: 2, H0436: 2, L0754: 2, H0170: 1, S0134: 1, H0650: 1, S0116: 1, S0282: 1, S0418: 1, S0376: 1, H0580: 1, S0045: 1, H0393: 1, L0622: 1, L0623: 1, S0280: 1,		

HETIJ06	997165	282	41 - 385	2457	Leu-6 to Ser-11.	L0021: 1, H0599: 1, H0318: 1, S0474: 1, H0150: 1, H0041: 1, H0050: 1, S0388: 1, H0271: 1, S0003: 1, H0673: 1, L0456: 1, H0135: 1, H0412: 1, H0056: 1, H0623: 1, S0386: 1, S0112: 1, H0494: 1, S0144: 1, S0344: 1, H0529: 1, L0763: 1, L0638: 1, L0646: 1, L0764: 1, L0766: 1, L0650: 1, L0375: 1, L0653: 1, L0776: 1, L0783: 1, L0543: 1, L0647: 1, L0787: 1, L0788: 1, L0664: 1, L0352: 1, H0547: 1, H0593: 1, H0690: 1, H0435: 1, H0670: 1, H0648: 1, H0672: 1, H0651: 1, H0539: 1, H0521: 1, H0522: 1, S3014: 1, S0027: 1, S0206: 1, L0759: 1, S0434: 1, L0595: 1, H0668: 1, S0026: 1 and H0293: 1.	S0402: 1, S0360: 1,	

HAPOE30	997595	283	244 - 759	2458	Glu-6 to Trp-12, Leu-36 to Glu-57, Pro-74 to Asn-88, Ser-119 to Glu-131, Pro-139 to Asp-153.	H0046: 1, H0252: 1 and H0428: 1.	L0777: 9, L0803: 5, L0748: 5, L0663: 4, L0754: 4, L0747: 4, L0753: 4, L0758: 4, L0766: 3, H0659: 3, L0763: 2, L0519: 2, L0665: 2, S0126: 2, L0602: 2, L0439: 2, L0750: 2, T0002: 1, H0686: 1, S0040: 1, S0116: 1, S0222: 1, H0575: 1, H0122: 1, H0004: 1, H0309: 1, L0040: 1, L0163: 1, H0028: 1, H0615: 1, H0040: 1, L0770: 1, L0764: 1, L0773: 1, L0662: 1, L0794: 1, L0774: 1, L0805: 1, L0655: 1, L0657: 1, L0526: 1, L0809: 1, L0789: 1, L0666: 1, L0664: 1, T0068: 1, H0670: 1, H0672: 1, L0744: 1, L0740: 1, L0751: 1, L0749: 1, L0779: 1, L0752: 1, L0731: 1, L0759: 1,		

HRGDC33	997862	284	229 - 738	2459		L0591: 1 and S0011: 1.	H0134: 1 and L0756: 1.		
HMTMB91	997873	285	1037 - 1174	2460	Lys-1 to Arg-46.	L0794: 11, L0803: 10, H0013: 6, H0090: 6, L0766: 6, L0663: 6, L0731: 6, H0457: 5, H0328: 5, L0493: 5, L0666: 5, L0777: 5, L0759: 5, L0754: 4, L0779: 4, H0305: 3, L0665: 3, H0144: 3, H0670: 3, H0696: 3, L0591: 3, H0657: 2, S0442: 2, S0360: 2, L0717: 2, H0600: 2, H0156: 2, H0590: 2, H0024: 2, H0615: 2, L0483: 2, T0042: 2, S0422: 2, H0529: 2, L0625: 2, L0805: 2, L0776: 2, L0655: 2, L0527: 2, S0374: 2, H0521: 2, H0436: 2, L0745: 2, L0588: 2, L0581: 2, L0361: 2, H0542: 2, S0424: 2, H0624: 1, H0171: 1, H0686: 1, T0049: 1, H0650: 1, H0656: 1,			

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					L0526: 1, L0519: 1, L0788: 1, L0790: 1, L0791: 1, L0664: 1, S0296: 1, H0520: 1, H0547: 1, H0519: 1, S0126: 1, H0682: 1, H0659: 1, H0658: 1, H0660: 1, H0672: 1, S0380: 1, H0518: 1, H0525: 1, S0404: 1, S0406: 1, H0479: 1, S0432: 1, L0744: 1, L0750: 1, L0780: 1, L0753: 1, L0604: 1, S0106: 1, S0242: 1, S0196: 1, H0543: 1, H0423: 1 and S0452: 1.		
HFAAD07	998059	286	238 - 957	2461	Ser-62 to Thr-67, Val-74 to Cys-79, Thr-118 to Gln-132, Glu-204 to Asp-219, Pro-225 to Arg-235.	L0809: 5, L0439: 4, L0591: 2, S6024: 1, H0341: 1, H0346: 1, S0356: 1, S0358: 1, S0360: 1, L0040: 1, H0457: 1, H0494: 1, L0518: 1, L0666: 1, L0665: 1, S0330: 1, H0521: 1, L0752: 1, L0731: 1, L0758: 1, L0590: 1 and L0599: 1.		
HE8TG67	998517	287	1211 - 1360	2462	Pro-24 to His-31.		3q28	165500, 600700

HACNC39	998533	288	36 - 380	2463	Glu-14 to Lys-25.	L0748: 9, L0769: 7, L0776: 6, L0747: 6, L0768: 5, L0775: 5, L0750: 5, S0358: 4, S0144: 4, L0763: 4, L0731: 4, L0757: 4, L0588: 4, H0657: 3, S0046: 3, H0545: 3, S0438: 3, S0422: 3, L0770: 3, L0517: 3, S0406: 3, L0755: 3, T0049: 2, H0341: 2, S0408: 2, S0410: 2, H0580: 2, S0222: 2, H0586: 2, L0622: 2, T0109: 2, H0083: 2, H0551: 2, H0100: 2, H0396: 2, S0440: 2, S0210: 2, L0520: 2, L0764: 2, L0767: 2, L5574: 2, L0540: 2, L0518: 2, L0809: 2, S0330: 2, S0380: 2, L0758: 2, S0031: 2, H0543: 2, H0170: 1, H0685: 1, H0716: 1, H0295: 1, S0212: 1, S0110: 1, S0282: 1, S0420: 1, S0444: 1, H0351: 1, H0411: 1,		

		S0278: 1, H0643: 1, L0623: 1, H0427: 1, H0575: 1, H0004: 1, T0048: 1, T0001: 1, H0196: 1, H0009: 1, H0023: 1, T0003: 1, S0388: 1, S0051: 1, H0266: 1, H0628: 1, H0124: 1, H0708: 1, H0163: 1, H0038: 1, H0040: 1, T0067: 1, H0413: 1, H0494: 1, H0625: 1, L0065: 1, H0130: 1, H0641: 1, H0633: 1, H0743: 1, L0761: 1, L0772: 1, L0646: 1, L0521: 1, L0766: 1, L0561: 1, L0774: 1, L0523: 1, L0559: 1, L0634: 1, L0783: 1, L0663: 1, L0664: 1, L0565: 1, H0547: 1, H0690: 1, H0666: 1, H0672: 1, H0710: 1, S0152: 1, S0118: 1, S3014: 1, S0027: 1, S0032: 1, L0751: 1, L0752: 1, S0308: 1, L0603: 1, H0136: 1, H0423: 1 and		

HCOQP78	998901	289	45 - 989	2464	Thr-10 to Ala-18, Pro-56 to His-64, Pro-66 to Leu-74, Ser-81 to Asp-86, Glu-93 to Trp-101, Leu-143 to Gln-151, Pro-162 to Asp-171, Thr-216 to Asp-224, Pro-235 to Gln-246, Lys-258 to Gly-268, Trp-283 to Gly-295.	S0396: 1. H0494: 4, L0794: 3, H0670: 2, L0751: 2, H0661: 1, H0602: 1, H0587: 1, H0014: 1, H0688: 1, L0376: 1, L0806: 1, L0657: 1 and L4501: 1.	19q13	109560, 205900, 600652, 600757
HCGMA67	998905	290	2 - 664	2465		H0521: 22, L0601: 8, H0266: 7, S0126: 7, L0748: 6, H0556: 4, S0356: 4, S0358: 4, H0052: 4, L0771: 4, L0655: 4, L0777: 4, H0599: 3, H0581: 3, H0046: 3, H0615: 3, H0038: 3, H0616: 3, S0144: 3, L0766: 3, L0664: 3, L0665: 3, H0547: 3, S3014: 3, L0758: 3, L0759: 3, L0596: 3, H0542: 3, H0423: 3, H0295: 2, T0049: 2, S0360: 2, H0580: 2, S0045: 2, S0132: 2, H0393: 2,		

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							L0605: 1, L0581: 1, L0595: 1, L0603: 1, H0665: 1, S0192: 1, H0543: 1 and H0422: 1.		
HSKHK19	998968	291	2 - 673	2466	Ala-1 to Arg-26, Thr-32 to Gln-37.	L0769: 7, L0751: 6, L0666: 4, L0749: 3, H0030: 2, S0002: 2, L0805: 2, L0653: 2, H0657: 1, H0675: 1, S0007: 1, L0717: 1, H0635: 1, L0021: 1, H0068: 1, H0494: 1, L0638: 1, L0639: 1, L0772: 1, L0764: 1, L0773: 1, L0648: 1, L0803: 1, L0784: 1, L0806: 1, L0657: 1, H0658: 1, S3014: 1, L0747: 1, L0750: 1, L0780: 1, L0759: 1, L0588: 1, L0601: 1 and H0542: 1.	7q35-q36	118425, 118425, 118425, 142335, 152427, 163729, 176450, 180105, 190605, 276000, 276000, 600510, 600725
HAGGR59	999124	292	30 - 596	2467	Asp-20 to Ile-37, Arg-63 to Met-71, Gly-80 to Gly-95, Lys-98 to Thr-162.	H0556: 1, H0650: 1, S0001: 1, S0376: 1, S0346: 1, H0328: 1, L0800: 1, L0649: 1, H0689: 1, H0660: 1 and H0445: 1.			
HOPKS83	999148	293	419 - 1894	2468	Pro-72 to Tyr-80, Pro-98 to Ser-108,	S0278: 22, L0439: 20, L0665: 16, L0438: 15,			

				Thr-132 to Gly-146, Pro-170 to Ala-177, Ser-265 to Pro-280, Pro-303 to Asp-309, Asp-349 to Ala-354, Arg-387 to Ser-393, Asn-434 to Tyr-439, Gln-452 to Gly-457, Asp-469 to Val-485.	L0748: 15, L0747: 15, H0521: 11, L0743: 10, L0759: 10, S0144: 9, L0666: 9, L0659: 8, L0741: 8, S0049: 7, S0002: 7, H0547: 7, S0126: 7, S0222: 6, H0052: 6, H0457: 6, S0036: 6, H0539: 6, L0731: 6, L0757: 6, H0575: 5, H0012: 5, H0100: 5, L0649: 5, L0742: 5, L0751: 5, S0046: 4, H0333: 4, H0581: 4, H0188: 4, H0424: 4, L0770: 4, L0764: 4, L0662: 4, H0555: 4, L0758: 4, L0601: 4, H0295: 3, H0549: 3, S0290: 3, H0618: 3, H0086: 3, H0620: 3, H0024: 3, H0551: 3, L0526: 3, L0663: 3, H0670: 3, H0672: 3, L0755: 3, H0255: 2, S0418: 2, H0580: 2, H0393: 2, H0351: 2, H0550: 2, H0253: 2, H0545: 2, H0123: 2, H0290: 2,	

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HE8CY70	999157	294	691 - 1368	2469	Lys-117 to Pro-123, Asp-132 to Lys-137, Ala-153 to Met-158, Ser-166 to Asp-172, Lys-184 to Tyr-190, Glu-199 to Lys-205.	H0441: 3, H0672: 2, H0555: 2, H0208: 1, S6016: 1, S0222: 1, H0586: 1, H0013: 1, S0049: 1, H0052: 1, H0545: 1, H0046: 1, S0051: 1, T0023: 1, H0617: 1, H0264: 1, H0647: 1, L0438: 1, L0751: 1, L0756: 1 and H0506: 1.		
HPCTI53	999243	295	1 - 474	2470	Pro-1 to Pro-6, Thr-134 to Gln-140, Tyr-142 to Arg-150.	H0052: 45, H0384: 21, L0748: 20, S0222: 14, S0010: 9, H0441: 6, S0049: 6, L0456: 6, S0346: 5, L0769: 5, S6028: 4, H0428: 4, L0770: 4, L0638: 4, L0438: 4, H0659: 4, L0750: 4, L0753: 4, H0619: 3, S0300: 3, T0010: 3, S0036: 3, H0624: 2, H0717: 2, S6024: 2, H0156: 2,	Xq11	313700, 313700, 313700, 313700, 313700

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HOPKN50	999313	296	65 - 1582	2471	Glu-47 to Phe-69, Lys-76 to Lys-82, Gly-87 to Ser-98, Glu-107 to Asp-117, Leu-171 to Val-180.	H0341: 2, H0013: 2, L0471: 2, H0266: 2, H0144: 2, L0591: 2, S0011: 2, H0624: 1, H0657: 1, H0151: 1, H0083: 1, H0328: 1, H0316: 1, H0591: 1, H0616: 1, H0412: 1, H0561: 1, S0210: 1, H0684: 1, S0152: 1, L0748: 1, L0749: 1, S0026: 1, H0542: 1 and H0543: 1.		
HAPAI17	999778	297	2 - 115	2472	Val-13 to Gln-26.	H0042: 1, L0769: 1 and H0659: 1.		
HHAUV59	999808	298	14 - 715	2473	Glu-1 to Gly-12, Lys-32 to Arg-37, Asn-45 to Ser-58, Asp-82 to Gln-97, Gly-136 to Gln-142,	L0761: 3, H0740: 2, L0803: 2, L0718: 2, H0624: 1, S0418: 1, H0208: 1, H0013: 1, H0427: 1, H0544: 1,		

HTXLL31	1000315	299	1 - 747	2474	Pro-176 to Pro-199, Val-219 to Pro-226.	H0622: 1, L0769: 1, L0789: 1, H0547: 1, H0519: 1, L0750: 1 and S0434: 1.		
					Ile-5 to Lys-10, Glu-47 to Leu-57, Glu-144 to Pro-151, Lys-212 to Asn-217, Pro-219 to Leu-228.	L0803: 6, L0731: 6, L0596: 6, L0665: 5, H0591: 3, L0794: 3, L0804: 3, L0748: 3, L0777: 3, L0717: 2, H0586: 2, L0471: 2, H0622: 2, H0641: 2, L0771: 2, L0662: 2, L0766: 2, L0649: 2, L0664: 2, H0682: 2, H0670: 2, H0539: 2, H0518: 2, L0758: 2, L0759: 2, H0445: 2, S0242: 2, H0422: 2, H0171: 1, H0556: 1, H0657: 1, H0656: 1, H0341: 1, S0282: 1, S0354: 1, S0360: 1, H0574: 1, H0427: 1, H0575: 1, H0057: 1, H0014: 1, H0551: 1, H0646: 1, H0529: 1, L0763: 1, L0761: 1, L0764: 1, L5574: 1, L0775: 1, L0805: 1, L0776: 1, L0657: 1,		

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HDPUH64	1000339	300	2 - 499	2475			H0615: 5, L0766: 4, H0272: 1, H0560: 1, H0521: 1 and H0677: 1.	
HTTHS93	1000424	301	725 - 1024	2476			S0360: 2, H0266: 2, S0330: 2, L0748: 2, H0556: 1, S0442: 1, L0471: 1, H0024: 1, H0634: 1, H0494: 1, H0560: 1, L0800: 1, L0803: 1, H0435: 1, H0651: 1, H0521: 1, H0522: 1, S0406: 1, L0747: 1 and S0452: 1.	
HMVCG79	1000582	302	3 - 854	2477	Thr-40 to Arg-46, Leu-59 to Ser-68, Leu-236 to Thr-241, Asp-278 to His-284.		AR089: 6, AR060: 5, AR033: 4, AR104: 4, AR096: 4, AR039: 3, AR052: 3, AR053: 3, AR061: 2, AR055: 1 S0002: 4, S0206: 4, L0748: 2, L0740: 2, L0777: 2, S0212: 1, H0661: 1, S0278: 1, H0370: 1, H0123: 1,	

						S0142: 1, L0800: 1, L0790: 1, H0539: 1, H0555: 1, S3014: 1, S0028: 1, L0754: 1 and L0759: 1.		
HODHK20	1000669	303	52 - 648	2478	Gly-2 to Ile-8, Glu-13 to Ser-25, Glu-41 to Gly-52.	H0615: 2, S0376: 1, L0766: 1 and L0754: 1.		
HCHMO53	1000875	304	2 - 661	2479	Pro-2 to Gly-25, Gly-40 to Lys-62, Arg-73 to Ala-80, Phe-179 to Arg-184, Pro-190 to His-195, Glu-211 to Ala-219.	AR060: 16, AR052: 8, AR053: 7, AR033: 6, AR104: 6, AR089: 6, AR039: 5, AR061: 5, AR096: 4, AR055: 2 L0776: 8, L0731: 8, S0438: 6, L0752: 6, H0677: 6, S0410: 5, S0440: 5, L0764: 5, L0749: 5, T0049: 4, S0132: 4, L0766: 4, H0648: 4, L0759: 4, L0519: 3, H0684: 3, L0748: 3, L0747: 3, L0757: 3, S0358: 2, S0444: 2, T0006: 2, L0775: 2, L0806: 2, S0152: 2, L0751: 2, L0750: 2, L0758: 2, S0436: 2, H0423: 2, H0624: 1, H0556: 1, H0157: 1, H0295: 1,		

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HFKKG84	1001066	305	1 - 666	2480	Gly-33 to Trp-52, Tyr-104 to Ser-110,	AR096: 32, AR104: 27, AR089: 24, AR060:		

				Ile-150 to Ala-157, Ser-159 to Ala-171, Gly-178 to Gly-186, Ala-188 to Ser-204.	22, AR061: 15, AR055: 13 L0766: 10, L0779: 5, L0770: 4, L0803: 4, L0769: 3, L0761: 3, L0747: 3, H0170: 2, H0686: 2, H0617: 2, L0800: 2, L0794: 2, L0806: 2, L0776: 2, L0754: 2, H0685: 1, H0295: 1, H0656: 1, H0402: 1, S0418: 1, H0486: 1, L0471: 1, H0620: 1, H0083: 1, H0688: 1, H0135: 1, H0625: 1, S0422: 1, L0772: 1, L0646: 1, L0643: 1, L0644: 1, L0764: 1, L0768: 1, L0807: 1, L0783: 1, H0522: 1, L0750: 1, L0777: 1, L0755: 1, L0731: 1, S0026: 1 and S0424: 1.		
HOFMT20	1001333	306	127 - 267	2481	Ser-5 to Glu-12.	H0415: 2		
HPAMB04	1001695	307	40 - 621	2482	Lys-106 to Leu-111.	H0641: 38, S0360: 10, L0731: 8, H0542: 7, H0422: 7, H0545: 6, H0521: 6, L0750: 6, H0423: 6, H0617: 5,		

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HODEK48	1001901	308	368 - 682	2483	Thr-2 to Gln-8, Glu-20 to Gly-26.	H0615: 2, L0794: 2 and H0266: 1.			
HVVCB28	1001954	309	328 - 807	2484	Ile-8 to Gly-13, Pro-62 to Phe-68, Gly-95 to Gly-101, Ser-108 to Val-114, Glu-129 to Leu-146.	H0617: 43, H0341: 38, S0046: 37, L0747: 34, S0126: 30, L0507: 29, L0500: 29, S0007: 28, H0087: 28, L0775: 28, L0509: 28, H0594: 27, H0333: 24, L0772: 24, S0132: 23, H0620: 23, L0502: 23, L0768: 21,	19q13.2		107741, 113900, 122720, 122720, 126340, 126391, 160900, 164731, 173850,

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HDACA35	1002096	311	68 - 472	2486	Asp-1 to Lys-12, Pro-18 to Arg-26, Asp-51 to Val-74, Ala-80 to Leu-102.	AR039: 12, AR033: 6, AR053: 6, AR096: 6, AR055: 6, AR089: 5, AR104: 5, AR052: 5, AR060: 4, AR061: 3 H0497: 1, H0617: 1, L0769: 1, L0766: 1, L0775: 1, H0670: 1 and		

						H0672: 1.			
HOVDG59	1002328	312	1 - 639	2487	Pro-1 to His-7, Glu-61 to Lys-67, Arg-94 to Phe-104, Pro-164 to Trp-169.	AR052: 20, AR039: 14, AR053: 13, AR096: 11, AR033: 11, AR055: 9, AR089: 9, AR104: 8, AR061: 7, AR060: 6 L0438: 6, L0439: 6, L0776: 5, H0428: 4, L0805: 4, H0687: 3, L0770: 3, H0651: 3, L0789: 2, L0756: 2, L0758: 2, L0361: 2, S0212: 1, S0001: 1, H0351: 1, H0587: 1, H0581: 1, H0052: 1, H0327: 1, H0178: 1, L0769: 1, L0767: 1, L0794: 1, L0807: 1, S0152: 1, H0522: 1, L0731: 1, L0759: 1 and L0608: 1.		
HTJAD78	1002459	313	1236 - 196	2488	Thr-2 to Gln-13, Ser-23 to Ser-28, Ser-36 to Ser-42.	L0748: 29, L0581: 21, H0510: 8, H0255: 5, H0574: 5, H0506: 4, H0331: 3, H0581: 3, H0264: 3, L0803: 3, L0774: 3, L0663: 3, H0555: 3, S0116: 2, H0632: 2, H0087: 2,	14q32.33	144120, 147020, 147110	

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						Cys-20 to Gly-29.	S0212: 7, L0809: 7, L0747: 7, S0045: 6, H0046: 6, H0551: 6, L0775: 6, L0751: 6, L0749: 6, L0757: 6, H0545: 5, S0126: 5, S3012: 5, S0040: 4, H0618: 4, H0318: 4, H0251: 4, H0024: 4, H0083: 4, S0250: 4, H0124: 4, H0100: 4, L0794: 4, L0438: 4, S0027: 4, L0731: 4, H0295: 3, S0222: 3, H0253: 3, H0644: 3, L0776: 3, L0659: 3, L0665: 3, H0539: 3, L0439: 3, L0740: 3,
				2489			
			170 - 508				
		314					
	1002468						
HCDCF69							

		S0046: 2, S0476: 2, H0619: 2, H0427: 2, H0599: 2, H0575: 2, H0052: 2, H0544: 2, H0546: 2, H0123: 2, H0050: 2, H0012: 2, H0620: 2, H0051: 2, H0188: 2, H0252: 2, H0622: 2, S0440: 2, H0509: 2, H0647: 2, L0763: 2, L0769: 2, L0772: 2, L0372: 2, L0646: 2, L0374: 2, L0803: 2, L0774: 2, L0375: 2, L5623: 2, L0666: 2, L0663: 2, L0664: 2, H0660: 2, H0672: 2, H0521: 2, H0631: 2, S0037: 2, S3014: 2, L0743: 2, L0744: 2, L0779: 2, L0758: 2, H0265: 1, H0740: 1, T0049: 1, H0341: 1, H0483: 1, H0663: 1, S0354: 1, S0360: 1, S0410: 1, H0734: 1, H0339: 1, S0132: 1, H0455: 1, H0574: 1, H0486: 1, H0013: 1, L0021: 1,			

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HPTTW90	1002479	315	3 - 356	2490	Glu-80 to Arg-86.	L0439: 3, H0688: 2, S0142: 2, L0664: 2, H0521: 2, L0751: 2, S0418: 1, S0222: 1, S0250: 1, H0252: 1, H0213: 1, H0617: 1, H0641: 1, S0344: 1, L0371: 1, L0803: 1, L0653: 1, L0527: 1, L0659: 1, H0520: 1, L0780: 1 and H0423: 1.	4p16.3	134934, 134934, 134934, 134934, 143100, 180072, 180072, 194190, 252800, 252800, 252800, 600965
HSUBG36	1002492	316	58 - 342	2491	Arg-7 to Val-13, Leu-28 to Arg-33, Ser-69 to Gln-76.	L0749: 9, L0766: 5, H0659: 5, H0657: 4, S0022: 4, S0438: 3, S0422: 3, L0521: 3, L0518: 3, L0783: 3, H0144: 3, L0758: 3, H0685: 2, H0656: 2,	1q32	114208, 114208, 119300, 120620, 120620, 120920, 134370,

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HODFU72	1002527	317	3 - 1199	2492	Leu-14 to Asn-32, Ala-35 to Gly-40, Lys-51 to Ser-56, Ala-68 to Leu-78, Ile-91 to Lys-99, Gly-101 to Ala-124, His-141 to Lys-152, Ser-174 to Asp-181, Pro-203 to Leu-215, Lys-294 to Gly-301.	L0777: 9, L0754: 8, H0457: 6, H0251: 5, H0615: 5, L0757: 5, S0360: 4, H0031: 4, L0731: 4, H0445: 4, H0438: 3, L0369: 3, L0662: 3, L0766: 3, L0659: 3, S0126: 3, L0747: 3, H0013: 2, H0644: 2, H0628: 2, L0598: 2, L0770: 2, L0769: 2, L0775: 2, L0805: 2, L0666: 2, S0374: 2, H0682: 2, L0779: 2, L0758: 2, L0759: 2, L0599: 2, L0595: 2, H0543: 2, H0423: 2, H0170: 1, H0556: 1, S0040: 1, H0381: 1, L0481: 1, S0358: 1, S0376: 1, T0008: 1, S0046: 1, H0393: 1, L0717: 1, S0222: 1, H0587: 1, H0333: 1, H0642: 1,	

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HCNSF57	1002545	318	20 - 826	2493	Ser-80 to Gln-98.	L0605: 1, L0590: 1, L0591: 1, L0593: 1, S0026: 1, S0242: 1, S0276: 1 and H0422: 1.			
HODJU13	1002546	319	2 - 121	2494	Thr-2 to Ser-9, Pro-23 to Glu-34.	H0615: 2			
HODIL25	1002551	320	195 - 1556	2495	Ser-30 to Lys-46, Leu-55 to Gly-67, Ile-80 to Asp-85, Glu-146 to Arg-155, Asn-182 to Arg-192.	H0040: 6, H0013: 3, S0136: 3, L0777: 3, H0542: 3, H0171: 2, H0581: 2, H0328: 2, H0615: 2, L0662: 2, H0144: 2, L0731: 2, H0624: 1, H0170: 1, H0556: 1, S0282: 1, H0661: 1, H0176: 1, H0402: 1, S0354: 1, S0360: 1, H0393: 1, S6014: 1, H0574: 1, H0427: 1, H0575: 1, L0157: 1, S0003: 1, H0553: 1, H0090: 1, H0591: 1, T0067: 1, H0264: 1, H0412: 1, T0041: 1, H0494: 1, H0646: 1, S0002: 1, L0646: 1, L0642: 1, L0645: 1, L0651: 1, L0655: 1, L0659: 1, L0791: 1, L0666: 1,			

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HUVHS56	1002563	321	162 - 791	2496	Gln-34 to Pro-41, Lys-60 to Thr-71, Val-78 to Gln-86, His-139 to Tyr-149, Arg-183 to His-191.	L0803: 4, L0793: 4, L0749: 4, L0438: 3, L0439: 3, S0420: 2, H0485: 2, H0038: 2, H0561: 2, L0804: 2, L0747: 2, L0779: 2, L0591: 2, H0265: 1, H0556: 1, S0418: 1, H0728: 1, H0208: 1, H0619: 1, S0278: 1, H0486: 1, H0244: 1, H0052: 1, S0366: 1, H0598: 1, H0623: 1, L0640: 1, L0364: 1, L0774: 1, L0776: 1, L0807: 1, L0659: 1, L0809: 1, L0791: 1, S0374: 1, H0520: 1, H0547: 1, H0521: 1, H0522: 1, S3014: 1, L0752: 1, L0759: 1, H0445: 1, S0436: 1 and L0599: 1.			
HPMJQ18	1002565	322	392 - 823	2497	Gln-29 to Gln-42.	H0644: 4, S0036: 1 and			

HLHCI46	1002591	323	114 - 923	2498	Glu-1 to Asp-13, His-55 to Leu-66, Gln-69 to Cys-79, Thr-81 to Asp-90, Gln-132 to Arg-141, Asp-158 to Trp-169, Lys-171 to Asn-180, His-208 to Arg-221, Pro-229 to Glu-237.	H0521: 1.	L0591: 15, L0751: 13, L0665: 11, L0754: 9, H0689: 6, L0750: 6, H0362: 3, H0688: 3, H0617: 3, L0774: 3, L0657: 3, H0658: 3, H0575: 2, H0615: 2, H0059: 2, H0690: 2, H0660: 2, S0330: 2, L0743: 2, L0756: 2, L0755: 2, H0671: 1, H0282: 1, H0024: 1, T0006: 1, H0644: 1, H0647: 1, L0769: 1, L0662: 1, L0803: 1, L0806: 1, L0783: 1, L0809: 1, L0664: 1, H0682: 1, L0748: 1, L0596: 1 and L0599: 1.		
HAOSD18	1002607	324	29 - 1408	2499	Arg-12 to Arg-19, His-62 to Leu-73, Ser-103 to Thr-111, Asn-147 to Val-158, Phe-207 to Trp-213, Lys-243 to Lys-276, Ala-281 to Cys-289, Pro-297 to Pro-302, Glu-315 to Asp-324,				

HACNG47	1002610	325	2 - 361	2500	Pro-1 to Lys-7.				
HOPJX95	1002729	326	229 - 681	2501	Val-105 to Ile-113, Asp-128 to Phe-137, Arg-145 to Arg-151.	H0341: 33, S0126: 19, L0471: 17, H0087: 17, H0659: 17, H0670: 17, H0333: 14, H0024: 14, H0685: 13, S0114: 13, S0358: 13, H0648: 13, S0046: 12, L0742: 12, L0588: 12, S0278: 11, H0594: 11, H0352: 11, S0134: 10, L0748: 10, S0116: 9, H0620: 9, L0754: 9, L0750: 9, H0422: 9, H0255: 8, S0007: 8, S0132: 8, H0318: 8, H0081: 8, H0012: 8, H0083: 8, S3012: 8, S3014: 8, H0543: 8, H0265: 7, H0009: 7, H0039: 7, S0027: 7, S0028: 7, H0295: 6, H0657: 6, L0622: 6, L0540: 6, H0436: 6, H0576: 6, H0624: 5, S0360: 5, H0351: 5, L0623: 5, H0069: 5, H0530: 5,	19q		

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HSCLR05	1002807	327	3 - 242	2502	Lys-1 to Asn-10, Phe-40 to Gly-55, Asn-61 to Arg-66.	L0748: 3, H0486: 1, H0428: 1, H0034: 1, H0690: 1, H0435: 1, H0658: 1, H0653: 1 and L0465: 1.		
HVVAO74	1002811	328	37 - 831	2503	Pro-107 to Gly-118, Gly-128 to Ser-140, Asp-148 to Glu-166, Ala-173 to Ala-186, Arg-196 to Ala-210, Ile-219 to Trp-228, Asn-238 to Met-251.	L0777: 17, L0766: 11, S0360: 10, L0748: 10, H0620: 8, H0124: 8, L0770: 8, H0295: 7, S0408: 7, S0046: 6, L0775: 6, L0659: 6, L0744: 6, L0595: 6, S0278: 5, S0440: 5, L0769: 5, L0655: 5, L0657: 5, L0666: 5, L0731: 5, H0556: 4, H0484: 4, S0358: 4, H0580: 4, S0222: 4, H0559: 4, H0052: 4, H0545: 4, H0673: 4,	12q23-q24	113100, 124200, 147440, 158590, 160781, 163950, 163950, 235800, 251170, 276710, 600175, 601517

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HVVBI81	1003126	329	199 - 843	2504	Asp-45 to Pro-56, Thr-86 to Ser-91, Pro-127 to Arg-133, Asp-201 to Gln-215.	L0777: 14, L0748: 11, L0747: 7, L0752: 7, H0295: 6, L0769: 6, L0749: 4, L0755: 4, H0341: 3, H0580: 3, H0581: 3, H0529: 3, L0770: 3, L0751: 3, L0750: 3, L0756: 3, L0605: 3, L0601: 3, L0615: 2, S0116: 2, H0402: 2, S0132: 2, H0575: 2, H0253: 2, H0309: 2, H0081: 2,	19q13.1-q13.2		

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HVVBK18	1003155	330	185 - 925	2505	Lys-75 to Lys-80, Leu-138 to Tyr-144, Tyr-153 to Pro-159.	L0740: 11, L0751: 11, L0731: 7, L0758: 7, H0659: 6, H0672: 6, L0748: 6, L0759: 6, H0251: 5, H0441: 4, L0766: 4, L0806: 4, S0040: 3, H0551: 3, H0412: 3, S0422: 3, L0774: 3, L0775: 3, H0648: 3, H0521: 3, L0754: 3, L0747: 3, L0752: 3, L0755: 3, S0026: 3, H0624: 2, H0341: 2, S0298: 2, S0358: 2, S0360: 2, S0046: 2, H0333: 2, H0318: 2, H0009: 2, H0024: 2, H0083: 2, S0214: 2, H0617: 2,	1p34.2	

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HOFMS19	1003222	331	12 - 317	2506		H0415: 2		21q11.2-q21.1	
HSCLM55	1003224	332	1 - 768	2507	Phe-2 to Asp-14, Leu-35 to Ile-42, Leu-63 to Lys-69, Thr-79 to Glu-84, Ile-137 to Gln-149, Thr-195 to Asp-200, Lys-216 to Glu-222, Asn-228 to Asn-233.				
HETJU23	1003706	333	860 - 1477	2508		AR055: 9, AR061: 8,			

					AR033: 6, AR060: 6, AR052: 5, AR089: 4, AR053: 3, AR096: 2, AR039: 2, AR104: 1 L0749: 4, L0794: 3, H0658: 3, H0046: 2, L0803: 2, L0666: 2, L0663: 2, L0777: 2, H0556: 1, H0351: 1, H0253: 1, H0014: 1, T0023: 1, H0038: 1, H0477: 1, H0412: 1, L0370: 1, L0763: 1, L0769: 1, L0639: 1, L0800: 1, L0768: 1, L0649: 1, L0804: 1, L0776: 1, L0367: 1, L0438: 1, H0435: 1, H0670: 1, H0666: 1, H0522: 1 and L0759: 1.		
HNOKB73	1004480	334	3 - 515	2509	S0192: 130, L0659: 16, L0666: 10, S0360: 7, L0771: 6, S0194: 5, L0662: 4, S0196: 4, L0665: 3, H0251: 2, H0252: 2, L0598: 2, L0638: 2, L0637: 2, L0649: 2, L0783: 2, H0684: 2, H0170: 1, H0687: 1, S0250: 1,		

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HODFB06	1004583	335	392 - 550	2510	Phe-11 to Gly-16, Gln-44 to Ile-53.	H0615: 3 and L0740: 1.		
HODJA76	1004619	336	198 - 302	2511	Ser-1 to Cys-12, Gly-16 to Val-29.	H0615: 1		
HODJY60	1004625	337	111 - 683	2512	Arg-1 to Gly-8, Thr-82 to Thr-95, Ser-104 to Ile-110, Asn-136 to Glu-141.	L0803: 11, L0748: 11, L0777: 10, L0754: 8, L0759: 6, S0126: 5, S0358: 3, L0804: 3, L0439: 3, L0740: 3, L0747: 3, L0731: 3, L0758: 3, L0415: 2, S0360: 2, H0437: 2, H0457: 2, S0003: 2, H0615: 2, L0774: 2, L0775: 2, L0375: 2, L0666: 2, S0328: 2, L0750: 2, L0779: 2, L0752: 2, L0755: 2, L0757: 2, H0341: 1, H0637: 1, H0580: 1, H0592: 1, L0021: 1, T0110: 1, H0620: 1, H0266: 1, S0314: 1,		

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HODEF10	1004627	338	1 - 231	2513	His-7 to Gly-17, Phe-24 to Trp-40.	H0615: 2			
HODFB03	1004631	339	1 - 711	2514	Gln-24 to Leu-29, His-38 to Asn-50, Gly-117 to Tyr-128, Ser-135 to Pro-147.	S0354: 1, H0083: 1, H0615: 1 and H0665: 1.	6p12-p11.1	180297, 230450, 263200, 601690	
HPMLN08	1004632	340	518 - 1294	2515		L0752: 14, L0777: 12, L0754: 11, L0731: 11, H0692: 10, L0758: 8, L0766: 6, L0759: 6, S0358: 5, L0809: 5, S0222: 4, S0003: 4, H0328: 4, L0769: 4, L0771: 4, L0803: 4,			

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							L0608: 1, L0362: 1, H0668: 1, S0026: 1, H0653: 1 and H0423: 1.	
HODEH08	1004633	341	1 - 378	2516			H0032: 5, H0620: 4, H0599: 3, H0024: 3, H0615: 3, H0556: 2, H0141: 2, H0585: 2, S0420: 2, H0014: 2, H0212: 2, L0748: 2, L0740: 2, H0624: 1, H0170: 1, H0149: 1, H0484: 1, H0580: 1, H0393: 1, H0370: 1, H0592: 1, H0318: 1, S0049: 1, H0052: 1, H0530: 1, H0081: 1, H0012: 1, H0023: 1, H0286: 1, H0039: 1, H0135: 1, H0272: 1, H0412: 1, H0059: 1, S0440: 1, H0132: 1, S0002: 1, L0602: 1, L0746: 1, H0445: 1 and H0506: 1.	
HEGBF25	1004635	342	57 - 773	2517	Ala-1 to Gly-23, Gly-26 to Leu-32, Leu-53 to Leu-65, Gln-145 to Thr-151.		AR096: 1, AR089: 1, AR104: 0, AR055: 0, AR060: 0, AR061: 0 L0761: 3, L0439: 3, L0747: 3, L0766: 2, H0659: 2, L0779: 2,	

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HODJB51	1004643	343	201 - 272	2518	Ser-1 to Asp-19.	H0328: 1 and H0615: 1.	
HODEC38	1004648	344	2 - 208	2519		L0764: 9, L0747: 6, L0766: 5, L0070: 5, L0748: 4, L0662: 3, L0749: 3, L0758: 3, L0759: 3, L0601: 3, H0574: 2, H0014: 2, H0615: 2, L0529: 2, L0666: 2, L0596: 2, H0265: 1, H0556: 1, H0583: 1, S0356: 1, S0360: 1, S0222: 1, H0486: 1, L0021: 1, H0581: 1, H0309: 1, H0545: 1, H0172: 1, H0188: 1, S0214: 1, H0252: 1, H0328: 1, H0674: 1, L0456: 1, H0625: 1, H0561: 1, S0426: 1, L0763: 1, L0769: 1, L0646: 1,	

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HODIQ24	1004660	345	3 - 236	2520	Arg-6 to Gly-11, Pro-18 to Glu-33, Ala-48 to Asp-68.	L0794: 7, L0776: 4, L0740: 4, H0046: 3, L0805: 3, L0749: 3, H0624: 2, S0282: 2, L0157: 2, H0615: 2, L0663: 2, H0519: 2, L0748: 2, L0747: 2, L0777: 2, L0731: 2, H0686: 1, H0294: 1, H0486: 1, H0349: 1, H0009: 1, H0178: 1, H0050: 1, L0471: 1, H0328: 1, H0030: 1, H0412: 1, S0448: 1, L0764: 1, L0662: 1, L0807: 1, L0789: 1, L0792: 1, L0666: 1,		

						S0126: 1, H0670: 1, L0742: 1, L0743: 1, L0754: 1, L0779: 1, L0780: 1 and L0759: 1.		
HVVDD56	1004887	346	399 - 1400	2521	Asn-32 to Glu-42, Leu-59 to Ala-66, Leu-73 to Arg-78, Leu-100 to Leu-110, Asp-155 to Thr-161, Thr-166 to Cys-173, Leu-214 to Ser-220, Ser-227 to Lys-232, Arg-236 to Gly-242, Phe-257 to Asp-264, Arg-309 to Ala-314.	H0581: 8, H0422: 7, L0766: 5, H0521: 4, L0588: 4, S0360: 3, H0486: 3, L0663: 3, H0436: 3, S0434: 3, H0583: 2, S0298: 2, S0354: 2, S0408: 2, H0046: 2, H0622: 2, H0090: 2, H0494: 2, L0761: 2, L0655: 2, L0659: 2, H0518: 2, H0522: 2, H0696: 2, L0777: 2, H0445: 2, H0423: 2, H0556: 1, S0430: 1, H0650: 1, H0657: 1, S0116: 1, S0356: 1, S0376: 1, H0580: 1, H0586: 1, L0586: 1, H0250: 1, L0021: 1, T0071: 1, H0596: 1, H0644: 1, H0264: 1, H0412: 1, H0561: 1, S0440: 1, H0641: 1, H0649: 1, L0770: 1, L5565: 1, L0372: 1, L0642: 1,		

					L0387: 1, L0381: 1, L0775: 1, L0527: 1, L0664: 1, L0665: 1, S0216: 1, S0374: 1, L0565: 1, H0684: 1, H0435: 1, H0659: 1, H0648: 1, H0672: 1, H0710: 1, H0555: 1, L0748: 1, L0754: 1, L0749: 1, L0756: 1, H0595: 1 and H0543: 1.		
HTHDV01	1004950	347	3 - 1292	2522	His-1 to Arg-20, Ala-30 to Ala-38, Ala-58 to Ser-69, Ser-138 to Pro-143, Leu-182 to Lys-198, Cys-204 to Thr-212, Ala-217 to Leu-229, Leu-237 to Lys-242, Asn-295 to Ser-302, Leu-314 to Phe-319, Ser-327 to Ser-338, Arg-409 to Ser-423.	H0696: 37, H0692: 26, H0650: 22, H0271: 21, S0434: 21, S0406: 17, H0656: 13, S0360: 13, H0411: 12, H0710: 12, S0280: 11, H0416: 11, H0553: 11, L0666: 11, H0486: 10, H0581: 10, H0555: 10, L0751: 10, H0713: 9, S0354: 9, L0662: 9, S0126: 9, H0717: 8, S0358: 8, L0774: 8, H0144: 8, S0374: 8, H0670: 8, L0745: 8, H0436: 7, L0748: 7, H0013: 6, H0427: 6, H0596: 6, H0644: 6, H0674: 6, L0659: 6, L0754: 6,	14q24.3	104311, 109150, 182600, 245200, 601208

		S0442: 5, H0580: 5, H0156: 5, H0457: 5, H0615: 5, H0622: 5, H0063: 5, L0776: 5, H0648: 5, H0263: 4, H0179: 4, H0031: 4, H0163: 4, L0764: 4, L0649: 4, L0438: 4, H0672: 4, L0439: 4, H0677: 4, L0600: 4, S0116: 3, S0444: 3, H0619: 3, H0421: 3, H0032: 3, S0438: 3, S0440: 3, L0598: 3, L0803: 3, L0809: 3, L0532: 3, L0664: 3, L0665: 3, H0689: 3, S0378: 3, L0756: 3, H0624: 2, H0556: 2, H0402: 2, S0356: 2, S0376: 2, S0046: 2, S0222: 2, H0574: 2, H0635: 2, H0575: 2, H0036: 2, H0597: 2, H0544: 2, H0046: 2, H0123: 2, H0050: 2, H0014: 2, H0201: 2, T0010: 2, H0355: 2, H0135: 2, T0004: 2, S0344: 2, S0002: 2,				

		L0769: 2, L0372: 2, L0375: 2, L0653: 2, S0328: 2, H0539: 2, L0602: 2, H0521: 2, H0479: 2, L0743: 2, L0744: 2, L0746: 2, L0749: 2, L0779: 2, L0758: 2, S0436: 2, H0265: 1, H0685: 1, H0716: 1, T0087: 1, S6024: 1, S0430: 1, S0212: 1, H0669: 1, H0662: 1, H0638: 1, S0418: 1, L0005: 1, H0645: 1, H0351: 1, S6022: 1, H0369: 1, H0550: 1, H0441: 1, H0409: 1, H0600: 1, H0586: 1, H0587: 1, L0586: 1, H0244: 1, H0098: 1, L0022: 1, H0590: 1, H0309: 1, H0231: 1, H0150: 1, H0081: 1, L0471: 1, H0620: 1, H0024: 1, H0373: 1, L0163: 1, H0060: 1, H0688: 1, H0428: 1, H0039: 1, T0023: 1, L0142: 1, H0168: 1, H0169: 1,			

					H0068: 1, H0038: 1, H0155: 1, S0294: 1, H0509: 1, H0131: 1, L0762: 1, L0763: 1, L0371: 1, L0638: 1, L5565: 1, L0373: 1, L0771: 1, L0768: 1, L0364: 1, L0650: 1, L0632: 1, L0523: 1, L0655: 1, L0783: 1, L0530: 1, L0647: 1, L0663: 1, H0725: 1, H0693: 1, L0352: 1, H0690: 1, H0660: 1, S0330: 1, S0380: 1, H0709: 1, S0350: 1, S0190: 1, S0404: 1, H0478: 1, L0611: 1, S3014: 1, S0027: 1, S0206: 1, L0740: 1, L0780: 1, L0731: 1, S0260: 1, H0445: 1, H0343: 1, L0599: 1, L0361: 1, S0462: 1 and S0456: 1.		125270, 125270, 128100, 137350, 191100,
HVVDJ95	1005153	348	203 - 400	2523	Pro-52 to Gly-58.	H0052: 1, H0012: 1, H0271: 1, H0165: 1, H0672: 1, H0521: 1, L0439: 1, L0754: 1 and H0423: 1.	9q34	

HODIY29	1005236	349	2115 - 1081	2524	Lys-1 to Phe-58, Pro-62 to Ser-105, Arg-118 to Asp-154, Pro-181 to Pro-187, Ala-215 to Asp-221, Pro-228 to Phe-240, Pro-264 to Ser-269, Ser-281 to Asp-291, Glu-301 to Phe-314.	L0748: 11, H0591: 2, L0779: 2, L0758: 2, H0624: 1, S0342: 1, S0045: 1, H0351: 1, H0427: 1, S0010: 1, H0052: 1, H0251: 1, N0006: 1, L0471: 1, H0266: 1, H0615: 1, H0622: 1, H0031: 1, H0090: 1, H0038: 1, L0769: 1, L0761: 1, L0766: 1, L0774: 1, L0657: 1, H0593: 1, H0521: 1, H0555: 1, L0744: 1, L0747: 1, L0750: 1 and L0777: 1.	21q22.1-q22.2	147450, 176261, 253270, 601399
HOELP29	1005359	350	3 - 1013	2525	Lys-5 to Leu-10, Ser-20 to Glu-30, Leu-32 to Thr-37.	L0755: 11, L0766: 4, L0747: 4, L0764: 2, L0663: 2, H0556: 1, H0686: 1, S0444: 1, S0408: 1, H0580: 1, H0722: 1, H0290: 1, L0483: 1, H0165: 1, H0494: 1, H0132: 1, S0150: 1, S0208: 1, L0772: 1, L0768: 1,	1p32	120950, 120960, 138140, 178300, 187040, 600101, 600650, 600650, 600722, 600722

						L0784: 1, L0805: 1, H0547: 1, S0126: 1, H0659: 1, H0660: 1, H0627: 1, L0749: 1, L0779: 1, L0731: 1, L0757: 1 and H0668: 1.		
HWLFG04	1005384	351	2 - 1015	2526	Lys-9 to Thr-17, Lys-41 to Asn-55, Leu-57 to Asn-65, Val-67 to Asn-79, Ile-122 to Cys-132, Leu-135 to Ala-147, Gln-175 to Ala-197, Pro-227 to Thr-251, Pro-253 to Gly-264, Pro-288 to Glu-296, Gln-312 to Val-321.	S0358: 3, H0539: 3, L0659: 2, L0664: 2, S0354: 1, S0360: 1, S0408: 1, S0007: 1, H0318: 1, S0474: 1, H0596: 1, H0266: 1, H0412: 1, L0369: 1, L0640: 1, L0656: 1, L0666: 1, L0663: 1, H0144: 1, H0648: 1, S0044: 1, L0755: 1, L0588: 1, L0592: 1, L0608: 1, L0362: 1 and H0423: 1.	7p15	138079, 138079, 139191, 142959, 153880, 180104, 600994, 601649
HYAAC49	1005511	352	2 - 781	2527		AR089: 5, AR096: 5, AR053: 4, AR060: 3, AR039: 3, AR033: 3, AR055: 2, AR104: 2, AR061: 1 H0583: 1 and H0036: 1.		
HCOOA71	1005843	353	68 - 205	2528	Thr-34 to Ser-46.	L0777: 8, L0809: 4, L0749: 4, H0038: 3, L0769: 3, L0783: 3,		

HOUFB45	1005974	354	879 - 478	2529	Ser-1 to Ser-7, Gly-21 to Arg-37.	L0665: 4, L0779: 3, L0646: 2, L0800: 2, L0650: 2, L0659: 2, S0040: 1, S0442: 1, S0045: 1, H0619: 1, H0052: 1, H0024: 1, S0051: 1, H0604: 1, H0030: 1, H0135: 1, L0639: 1, L0761: 1, L0372: 1, L0641: 1, L0771: 1, L0766: 1, L0803: 1, L0776: 1,	22q11.23	123620, 600850
						L0740: 3, H0581: 2, H0546: 2, H0024: 2, L0521: 2, L0375: 2, H0670: 2, L0748: 2, L0758: 2, L0759: 2, H0171: 1, S0360: 1, H0351: 1, L0622: 1, H0052: 1, H0424: 1, H0617: 1, H0087: 1, H0059: 1, H0494: 1, H0646: 1, L0369: 1, L0763: 1, L0766: 1, L0776: 1, L0657: 1, L0789: 1, L0666: 1, L0663: 1, L0565: 1, H0658: 1, L0439: 1, L0750: 1, L0753: 1 and L0757: 1.		

					L0657: 1, L0656: 1, L0783: 1, L0791: 1, L0666: 1, L0663: 1, L0438: 1, H0547: 1, H0672: 1, H0436: 1, L0748: 1, L0747: 1, L0749: 1, L0777: 1, L0758: 1 and L0608: 1.		
HUSJI14	1006018	355	399 - 2081	2530	Lys-5 to Met-10, Lys-79 to Ser-86, Ser-145 to Leu-154.	L0439: 13, L0777: 9, L0717: 8, L0748: 6, L0659: 5, L0747: 4, H0318: 3, L0665: 3, L0779: 3, H0170: 2, H0212: 2, L0455: 2, L0764: 2, L0662: 2, L0768: 2, L0766: 2, L0775: 2, L0655: 2, H0520: 2, H0672: 2, L0746: 2, L0755: 2, L0758: 2, L0759: 2, L0595: 2, H0624: 1, H0171: 1, H0685: 1, H0661: 1, H0402: 1, S0046: 1, H0333: 1, T0109: 1, H0013: 1, S0280: 1, L0021: 1, H0590: 1, H0581: 1, H0374: 1, H0596: 1, L0471: 1, H0014: 1, S0051: 1, S0003: 1,		

						H0328: 1, H0617: 1, H0040: 1, H0412: 1, H0494: 1, H0641: 1, L0761: 1, L0645: 1, L0773: 1, L0521: 1, L0375: 1, L0651: 1, L0805: 1, L0776: 1, L0526: 1, L0783: 1, L0809: 1, L0789: 1, L0666: 1, L0664: 1, H0701: 1, L0352: 1, H0547: 1, H0658: 1, H0670: 1, H0648: 1, H0651: 1, H0436: 1, L0740: 1, L0754: 1, L0752: 1, L0757: 1, L0591: 1, L0592: 1 and H0293: 1.		
HMCDB21	1006055	356	411 - 509	2531	Asn-1 to Arg-13.	L0794: 2, L0776: 2, L0745: 2, L0758: 2, S0260: 2, S0142: 1, L0500: 1 and H0648: 1.		
HSDEY08	1006142	357	594 - 1136	2532	Leu-25 to Phe-35, Lys-48 to Asp-54, Arg-62 to Phe-72, Tyr-92 to Leu-99.	L0534: 10, L0747: 10, L0769: 8, L0751: 7, L0592: 5, H0545: 4, L0770: 4, L0761: 4, L0438: 4, H0599: 3, T0010: 3, H0553: 3, L0646: 3, H0547: 3, S0028: 3, H0101: 2,		

		H0546: 2, H0050: 2, L0662: 2, L0794: 2, L0774: 2, L0378: 2, S0380: 2, L0752: 2, L0755: 2, L0758: 2, S0436: 2, L0603: 2, S0040: 1, H0295: 1, H0255: 1, S0418: 1, S0444: 1, S0360: 1, S0408: 1, H0580: 1, H0559: 1, H0156: 1, H0575: 1, H0706: 1, H0253: 1, H0457: 1, H0562: 1, H0566: 1, H0081: 1, L0471: 1, H0373: 1, H0083: 1, S6028: 1, H0266: 1, H0271: 1, S0250: 1, H0428: 1, H0617: 1, H0124: 1, H0708: 1, S0366: 1, H0135: 1, H0087: 1, H0551: 1, H0264: 1, H0488: 1, H0623: 1, T0041: 1, H0429: 1, H0561: 1, H0132: 1, H0130: 1, L0796: 1, L0639: 1, L0667: 1, L0764: 1, L0765: 1, L0768: 1, L0651: 1, L0805: 1,				

						L0776: 1, L0636: 1, L0809: 1, L0791: 1, L4501: 1, L0666: 1, L0663: 1, L0665: 1, S0428: 1, H0693: 1, H0520: 1, H0519: 1, H0690: 1, H0684: 1, H0670: 1, H0660: 1, H0648: 1, H0521: 1, H0134: 1, H0436: 1, L0612: 1, S0037: 1, L0742: 1, L0743: 1, L0744: 1, L0748: 1, L0439: 1, L0777: 1, L0780: 1, L0757: 1, L0759: 1, S0031: 1, S0434: 1 and S0192: 1.		
HOOJT92	1006215	358	41 - 172	2533	Ser-9 to Glu-18, Asp-22 to Asp-30.	L0748: 20, L0731: 10, L0776: 7, L0766: 6, L0754: 6, L0747: 6, L0752: 6, L0740: 5, L0755: 5, L0759: 5, H0550: 4, L0769: 4, L0438: 4, H0545: 3, H0051: 3, H0135: 3, L0662: 3, L0809: 3, L0666: 3, H0624: 2, H0685: 2, L0005: 2, H0645: 2, H0013: 2, S0346: 2, H0318: 2,		

		H0597: 2, H0050: 2, H0014: 2, H0553: 2, H0040: 2, H0616: 2, H0551: 2, S0344: 2, S0002: 2, L0761: 2, L0771: 2, L0650: 2, L0806: 2, L0659: 2, H0547: 2, H0539: 2, H0696: 2, L0439: 2, L0749: 2, L0756: 2, L0605: 2, L0591: 2, L0581: 2, L0362: 2, H0171: 1, H0556: 1, S0134: 1, S0218: 1, H0583: 1, L0427: 1, S0358: 1, H0580: 1, H0208: 1, H0619: 1, S0278: 1, H0369: 1, H0549: 1, H0431: 1, H0370: 1, H0333: 1, H0427: 1, H0599: 1, T0082: 1, H0421: 1, H0052: 1, H0457: 1, L0157: 1, H0024: 1, H0687: 1, H0290: 1, H0252: 1, T0006: 1, H0644: 1, L0143: 1, H0111: 1, H0165: 1, H0674: 1, H0591: 1, H0634: 1, H0488: 1,				

					H0623: 1, H0059: 1, S0112: 1, T0042: 1, H0561: 1, H0646: 1, H0652: 1, H0538: 1, L0763: 1, L0765: 1, L0648: 1, L0768: 1, L0803: 1, L0775: 1, L0375: 1, L0783: 1, L0530: 1, L0367: 1, L0663: 1, H0144: 1, H0519: 1, H0682: 1, H0659: 1, H0658: 1, H0648: 1, H0651: 1, S0378: 1, H0521: 1, L0611: 1, S0028: 1, L0750: 1, L0779: 1, L0777: 1, L0757: 1, L0758: 1, S0196: 1, H0542: 1, H0423: 1, H0422: 1, H0677: 1 and H0506: 1.		
HNORE03	1006250	359	1 - 669	2534	Lys-54 to Asp-62, Pro-102 to Gly-109, Gln-121 to Thr-134, Lys-159 to Leu-165, Thr-190 to Asn-196.	L0770: 2, L0662: 2, L4501: 2, H0521: 2, L0731: 2, L0758: 2, H0351: 1, S0222: 1, H0587: 1, H0687: 1, H0169: 1, H0412: 1, L0805: 1, L0666: 1, H0723: 1, H0691: 1, H0520: 1, H0659: 1,		

							S0330: 1, L0755: 1, L0759: 1, H0707: 1, L0608: 1, H0543: 1 and H0423: 1.	
HPCTS21	1006317	360	117 - 1754	2535	Arg-8 to Ser-35, Leu-40 to Cys-77.		L0766: 6, L0754: 6, L0779: 4, H0486: 3, L0665: 3, S0440: 2, L0756: 2, L0731: 2, L0758: 2, H0624: 1, H0717: 1, H0738: 1, H0125: 1, S0376: 1, S0360: 1, H0581: 1, L0157: 1, L0471: 1, S0250: 1, S0003: 1, H0316: 1, S0422: 1, L0769: 1, L0387: 1, L0803: 1, L0805: 1, L0776: 1, L0606: 1, L0659: 1, L0518: 1, L0793: 1, L0664: 1, H0689: 1, H0659: 1, H0658: 1, H0672: 1, S0328: 1, S0136: 1, H0134: 1, H0436: 1, H0732: 1, L0751: 1, L0777: 1, L0755: 1, L0759: 1, S0436: 1, H0422: 1 and S0412: 1.	
HFATL31	1006399	361	2 - 508	2536	Leu-17 to Arg-37, Pro-50 to Ser-77,		H0052: 2, H0620: 2, H0729: 1, S0300: 1,	

					Arg-85 to Gln-91, Glu-148 to Glu-153.	H0462: 1, H0550: 1, H0441: 1, H0333: 1, H0618: 1, S0010: 1, H0309: 1, H0032: 1, H0673: 1, H0124: 1, S0366: 1, S0036: 1, L0637: 1, S3014: 1, L0742: 1, L0743: 1, L0740: 1, L0750: 1, L0753: 1 and L0758: 1.		
HE2JE77	1006445	362	2 - 331	2537	Gly-67 to Leu-76, Cys-83 to Arg-89, Glu-96 to Asn-102.	L0521: 2, H0624: 1, H0539: 1 and H0555: 1.		
HCBNX87	1006470	363	948 - 529	2538	Gly-16 to Asn-31, Ala-36 to Ser-41, Glu-93 to Pro-100, Lys-135 to Gln-140.	H0693: 44, L0604: 5, S0366: 4, L0805: 4, H0637: 3, L0766: 3, H0672: 3, H0549: 2, H0271: 2, L0777: 2, H0661: 1, H0580: 1, H0173: 1, H0620: 1, H0428: 1, S0364: 1, L0641: 1, L0644: 1, L0655: 1, L0809: 1, L0791: 1, L0666: 1, L0663: 1, T0068: 1, H0576: 1, L0780: 1, L0731: 1, L0584: 1 and H0543: 1.		
HNTDJ68	1006483	364	3 - 653	2539	Val-9 to Ser-15, Phe-34 to Tyr-41,	AR052: 6, AR053: 5, AR055: 3, AR089: 3,		

					Glu-59 to Glu-75, Leu-94 to Asn-99, Asp-142 to Cys-152, Lys-166 to Leu-172, Lys-188 to Asn-194, Pro-212 to Ala-217.	AR033: 3, AR096: 3, AR061: 2, AR039: 2, AR060: 2, AR104: 2 H0615: 3, H0393: 1, H0441: 1, T0109: 1, H0318: 1, H0570: 1, H0566: 1, H0551: 1, H0625: 1, L0761: 1, L0766: 1, L0803: 1, L0784: 1, H0144: 1, H0539: 1, H0696: 1, L0744: 1, L0740: 1 and L0777: 1.		
HTRAA05	1006512	365	19 - 327	2540	Pro-11 to Phe-16, Ala-59 to Asp-66.	T0002: 1, H0164: 1 and L0761: 1.		
HMTAL96	1006635	366	1767 - 1321	2541	Ala-9 to Leu-20, Arg-70 to Thr-75, Pro-129 to Gly-139.	L0747: 6, L0754: 4, L0752: 4, S0280: 3, H0615: 3, L0766: 3, L0803: 3, L0805: 3, L0809: 3, L0740: 3, L0750: 3, L0731: 3, H0050: 2, L0471: 2, H0628: 2, H0032: 2, S0426: 2, H0648: 2, S0027: 2, L0779: 2, L0757: 2, L0759: 2, L0485: 2, H0656: 1, S0029: 1, S0356: 1, S0358: 1, S0376: 1, S0408: 1, H0580: 1,		

						S0046: 1, H0645: 1, S0222: 1, H0592: 1, H0486: 1, H0427: 1, H0042: 1, H0036: 1, H0004: 1, H0581: 1, H0434: 1, H0052: 1, T0110: 1, H0545: 1, S0051: 1, H0375: 1, H0328: 1, L0483: 1, H0030: 1, H0644: 1, H0090: 1, H0551: 1, H0100: 1, H0633: 1, S0344: 1, S0002: 1, L0761: 1, L0764: 1, L0521: 1, L0363: 1, L0774: 1, L0775: 1, L0558: 1, L0659: 1, L0782: 1, L0787: 1, H0691: 1, H0658: 1, H0651: 1, S0330: 1, H0539: 1, S0380: 1, H0518: 1, S0013: 1, H0555: 1, S3014: 1, L0748: 1, L0439: 1, L0749: 1, L0758: 1, S0031: 1, L0599: 1, L0362: 1, S0196: 1 and H0422: 1.		
HDTJP21	1006858	367	55 - 246	2542	Ile-3 to Ile-10, Pro-40 to Val-64.	H0615: 2 and H0486: 1.			

HISEQ81	1006943	368	298 - 2	2543	Glu-8 to Tyr-18, Asn-29 to Lys-35, Lys-62 to Ile-67, His-88 to Pro-99.	H0539: 2		
HODFH02	1006953	369	334 - 393	2544		H0615: 3		
HOCPP18	1007230	370	290 - 571	2545	Pro-11 to Phe-19, Phe-41 to Ser-54.	L0748: 3, L0471: 2, L0766: 2, L0752: 2, S0358: 1, H0357: 1, H0486: 1, H0270: 1, H0575: 1, S0182: 1, S0049: 1, T0067: 1, H0412: 1, H0560: 1, S0144: 1, S0326: 1, H0538: 1, S0422: 1, S0426: 1, L0764: 1, H0660: 1, H0521: 1, S0432: 1, L0740: 1, L0751: 1, L0754: 1, L0745: 1, L0747: 1, L0777: 1, L0731: 1, H0445: 1, L0608: 1 and H0667: 1.	14q21	182600, 232700, 602086, 602616
HODFP91	1007941	371	3 - 1016	2546	Glu-10 to Ser-19, His-41 to Lys-50, Glu-80 to Leu-86, Ser-142 to Leu-147, Lys-153 to Lys-161, Tyr-167 to Leu-175, Ser-177 to Asn-188, Gln-199 to Arg-228,	L0777: 4, L0517: 3, L0740: 3, L0599: 3, S0354: 2, H0615: 2, L0521: 2, L0663: 2, L0779: 2, L0591: 2, T0002: 1, H0013: 1, H0427: 1, H0553: 1, H0038: 1, L0520: 1,		

					Gln-257 to Glu-262, Asp-274 to Ser-279.	L0769: 1, L0638: 1, L0518: 1, L0809: 1, H0547: 1, L0439: 1, L0747: 1 and H0444: 1.		
H6EDU06	1007976	372	18 - 449	2547	Pro-6 to Leu-11, Glu-90 to Asn-95, Val-102 to Val-107, Ala-120 to Glu-126, Ala-132 to Thr-144.	H0686: 1, H0559: 1 and S0028: 1.		
HPCRD26	1008013	373	81 - 1334	2548	Gly-8 to Asp-16, Gly-71 to Pro-77, Met-98 to Tyr-105, Lys-129 to Arg-146, Gln-177 to Val-186, Gln-192 to Trp-216, Pro-223 to Asp-237, Ala-251 to Ser-258, Arg-287 to Arg-292, Met-323 to Gly-331.	AR053: 1, AR104: 1, AR061: 1, AR033: 1, AR060: 0, AR096: 0, AR039: 0, AR089: 0, AR052: 0, AR055: 0		
HSIEH63	1008027	374	3 - 554	2549	His-1 to Pro-7, Lys-43 to Asp-59, Thr-122 to Tyr-133, Gly-152 to Thr-160.	AR039: 9, AR089: 4, AR060: 4, AR055: 4, AR061: 3, AR033: 3, AR104: 3, AR053: 3, AR096: 1 S0354: 2, S0360: 1, H0036: 1, H0596: 1 and S0374: 1.		
HPASD51	1008071	375	3 - 752	2550	Glu-26 to Gly-31, Gly-33 to Trp-40, Ala-169 to Glu-175,	AR052: 51, AR061: 46, AR033: 35, AR053: 28, AR104: 26, AR055:		

				Gly-199 to Gly-204.	25, AR096: 25, AR060: 24, AR089: 23, AR039: 21 S0380: 5, L0748: 4, H0648: 3, S0378: 3, L0752: 3, L0766: 2, L0803: 2, L0665: 2, L0750: 2, H0661: 1, H0461: 1, H0270: 1, H0039: 1, H0622: 1, L0761: 1, L0657: 1, L0532: 1, L0666: 1, H0689: 1, S0330: 1, L0749: 1 and L0777: 1.	12		
				2551	Gly-28 to Pro-34, Lys-39 to Glu-47, Ala-63 to Cys-68, Asn-101 to Gly-111, Leu-144 to His-161, Asp-234 to Trp-245, Phe-396 to Ser-407.	L0803: 5, L0439: 5, L0750: 5, L0774: 4, H0657: 3, H0046: 3, H0687: 3, H0031: 3, L0773: 3, L0794: 3, L0776: 3, L0655: 3, L0657: 3, L0790: 3, L0438: 3, L0747: 3, L0731: 3, H0656: 2, T0042: 2, L0761: 2, L0764: 2, L0654: 2, S0152: 2, L0751: 2, L0749: 2, L0777: 2, L0759: 2, L0592: 2, H0543: 2, S6024: 1, H0341: 1, S0212: 1,			
			95 - 1315					
		376						
	1008154							
HCOQH27								

		S0420: 1, S0358: 1, S0360: 1, S0410: 1, H0637: 1, H0208: 1, S0045: 1, S0046: 1, H0393: 1, S0278: 1, H0369: 1, H0441: 1, H0357: 1, H0613: 1, T0039: 1, H0013: 1, H0427: 1, H0575: 1, S0010: 1, S0346: 1, H0209: 1, H0123: 1, H0024: 1, S0051: 1, T0010: 1, H0061: 1, H0266: 1, H0553: 1, H0598: 1, S0036: 1, H0038: 1, H0551: 1, H0264: 1, H0059: 1, L0351: 1, T0041: 1, L0475: 1, L0762: 1, L0631: 1, L0638: 1, L0643: 1, L0766: 1, L0804: 1, L0775: 1, L0375: 1, L0805: 1, L0791: 1, L0663: 1, S0126: 1, H0670: 1, H0660: 1, H0672: 1, H0521: 1, H0522: 1, H0696: 1, H0704: 1, S0044: 1, L0756: 1, L0757: 1, L0758: 1,			

HNTBU30	1008177	377	2 - 2737	2552	Leu-40 to Val-46, Gly-83 to Gln-89, Lys-123 to Gly-129.	L0588: 1, L0591: 1, L0485: 1, H0542: 1, H0423: 1, H0422: 1 and H0293: 1.	L0770: 7, L0777: 7, S0406: 5, L0439: 5, L0758: 4, H0659: 3, H0717: 2, H0494: 2, L0598: 2, L0764: 2, L0655: 2, H0547: 2, H0521: 2, H0478: 2, L0748: 2, L0731: 2, L0595: 2, L0411: 1, H0657: 1, H0656: 1, H0663: 1, S0358: 1, H0329: 1, H0645: 1, H0639: 1, H0415: 1, H0455: 1, H0156: 1, L0021: 1, H0052: 1, T0110: 1, L0471: 1, H0687: 1, S0250: 1, H0428: 1, H0553: 1, H0166: 1, H0598: 1, H0040: 1, H0551: 1, S0386: 1, H0560: 1, H0509: 1, H0538: 1, UNKWN: 1, L0763: 1, L0638: 1, L0646: 1, L0662: 1, L0364: 1, L0803: 1, L0659: 1,		

					L0636: 1, L0783: 1, L0666: 1, H0520: 1, H0519: 1, S0122: 1, H0435: 1, H0518: 1, H0694: 1, H0555: 1, H0436: 1, L0747: 1, L0749: 1, L0779: 1, L0752: 1, L0755: 1, S0031: 1, L0485: 1, H0422: 1 and H0506: 1.		114208, 114208, 119300, 120620, 120620, 120920, 134370, 134370, 134370, 134580, 145260, 150310, 150310, 179820, 191045, 276901, 600105, 600332, 600759, 601494,
HCOPZ14	1008179	378	763 - 1083	2553	H0556: 3, S0474: 2, H0622: 2, H0634: 2, S0434: 2, H0265: 1, H0254: 1, H0663: 1, S0046: 1, H0602: 1, H0586: 1, H0069: 1, H0575: 1, H0581: 1, H0251: 1, S0051: 1, H0617: 1, H0494: 1, H0670: 1, S0152: 1, L0748: 1 and L0603: 1.		1q32-q41	

HODEC78	1008299	379	1 - 1209	2554	Arg-1 to Cys-8, Ala-11 to Thr-22, Pro-87 to Leu-99, Lys-120 to Glu-144, Leu-179 to Lys-200, Glu-212 to Lys-221, Tyr-280 to Arg-287, Lys-292 to Gly-299, Val-314 to Ser-320, Pro-322 to Pro-340.	H0615: 2, L0766: 2, L0755: 2, L0471: 1, H0356: 1, T0023: 1, L0761: 1, L0794: 1, L0787: 1, L0789: 1, H0519: 1, L0745: 1, L0746: 1, L0591: 1 and L0593: 1.	12p11.2-p11.1	601744, 601975	112410, 135700, 168470, 200990
HODEF29	1008304	380	26 - 169	2555	His-8 to Gly-18.	H0615: 1			
HODFB71	1008307	381	369 - 671	2556	Lys-54 to Arg-59, Arg-66 to Arg-71.	L0805: 2, S0134: 1, H0486: 1, H0251: 1, H0235: 1, S0022: 1, H0615: 1, L0667: 1, L0776: 1, L0789: 1, L0758: 1 and H0423: 1.			
HODEF78	1008314	382	3 - 218	2557	Thr-4 to Ser-11, Pro-25 to Ala-31, Thr-38 to His-44.	H0615: 1			
HODEL83	1008324	383	3 - 416	2558	Ser-2 to Thr-13, Ile-16 to Ser-26, Pro-28 to Gln-36, Gln-41 to Pro-47, Pro-106 to Asp-111, Trp-127 to Thr-132.	H0615: 3			
HHPSH76	1008325	384	244 - 1206	2559	Ser-2 to Ser-7, Leu-51 to Arg-56,	L0776: 9, L0769: 4, L0789: 4, L0773: 3,			

				Lys-142 to Ser-149, His-178 to Ser-187, Tyr-261 to Gly-267, Arg-272 to Asp-292.	L0774: 3, L0750: 3, L0761: 2, L0771: 2, L0803: 2, L0807: 2, L0565: 2, L0745: 2, S0376: 1, H0549: 1, H0453: 1, H0587: 1, S0010: 1, S0324: 1, H0201: 1, H0687: 1, H0428: 1, H0538: 1, L0763: 1, L0770: 1, L0800: 1, L0643: 1, L0764: 1, L0794: 1, L0766: 1, L0775: 1, L0806: 1, S0328: 1, H0521: 1, L0780: 1, L0758: 1, L0759: 1, L0605: 1 and S0462: 1.		
HBGBE52	1008326	385	782 - 663	2560	Gly-1 to Glu-26, Val-28 to Leu-35.	H0181: 2, L0599: 2, H0014: 1, L0365: 1, L0665: 1, S0052: 1, S0216: 1, H0684: 1, S0152: 1, S0188: 1, H0345: 1 and L0366: 1.		
HBQAB30	1008327	386	3 - 737	2561	Asn-40 to Arg-68, Ser-86 to Ala-92, Ile-129 to Lys-145, Glu-162 to Ala-175, Glu-181 to Thr-204, Ser-206 to Lys-214, Leu-222 to Thr-231.	H0551: 2, S0354: 1, H0229: 1, S0049: 1, H0135: 1, H0529: 1 and S0028: 1.		

HLHCB31	1008332	387	1 - 558	2562	Asn-7 to Lys-19.	L0750: 4, L0777: 3, L0758: 3, S0354: 2, S0360: 2, H0039: 2, H0622: 2, H0617: 2, L0666: 2, H0520: 2, L0756: 2, L0759: 2, S0358: 1, H0549: 1, H0253: 1, H0009: 1, L0471: 1, H0620: 1, H0024: 1, H0083: 1, H0688: 1, L0142: 1, H0135: 1, H0038: 1, H0100: 1, H0646: 1, L0763: 1, L0761: 1, L0764: 1, L0662: 1, L0767: 1, L0794: 1, L0653: 1, L0659: 1, L0809: 1, L0665: 1, H0144: 1, H0547: 1, H0672: 1, L0741: 1, L0743: 1, L0744: 1, L0753: 1 and S0276: 1.	16q13-16q21	114835, 118470, 132700, 172490, 209900, 600968
HPFDV51	1008335	388	22 - 216	2563	Thr-5 to His-10, Pro-28 to Thr-40, Lys-46 to His-54.	H0670: 4, S0007: 2, H0014: 2, H0616: 2, L0005: 1, H0574: 1, H0632: 1, H0156: 1, H0169: 1, L0769: 1, L0805: 1, L0647: 1, H0648: 1, L0779: 1 and L0758: 1.		

HTEDY04	1008336	389	2 - 832	2564	Arg-2 to Gly-9, Arg-38 to Lys-46, Ser-53 to Ser-73, Asp-79 to Ala-84, Leu-129 to Glu-136, Glu-202 to Arg-210, Glu-216 to Ala-231, Glu-234 to Glu-254, Lys-259 to Leu-265.	L0803: 8, L0758: 8, L0809: 6, L0748: 6, H0038: 5, L0439: 5, H0616: 4, H0670: 4, L0756: 4, L0731: 4, L0794: 3, L0750: 3, L0770: 2, L0805: 2, L0776: 2, L0602: 2, L0779: 2, S0276: 2, S0282: 1, S0410: 1, H0369: 1, H0549: 1, H0618: 1, H0252: 1, H0615: 1, H0424: 1, H0213: 1, H0032: 1, H0212: 1, H0068: 1, T0067: 1, S0438: 1, L0769: 1, L0638: 1, L0804: 1, L0775: 1, L0806: 1, L0527: 1, L0782: 1, L0788: 1, L0789: 1, L0666: 1, L0664: 1, L0665: 1, H0658: 1, H0672: 1, S3012: 1, L0751: 1, L0745: 1, L0777: 1, L0780: 1, L0759: 1 and L0581: 1.	1p35.1	118210, 120550, 120570, 120575, 121800, 130500, 133200, 171760, 171760, 185470, 230350, 255800, 602771
HODEG13	1008337	390	2 - 166	2565	Gln-2 to His-10, Lys-21 to Glu-33.	H0615: 3		
HHPFK16	1008345	391	109 - 435	2566		H0663: 1, H0125: 1,		

HARAL81	1008349	392	220 - 20	2567	Ser-24 to Ala-30, Arg-55 to Ser-62.	S0418: 1, S0356: 1, H0051: 1, H0648: 1 and H0543: 1.	L0752: 6, L0663: 5, L0646: 3, L0754: 3, L0747: 3, H0031: 2, L0794: 2, H0659: 2, H0658: 2, L0748: 2, H0556: 1, H0657: 1, L0005: 1, S0354: 1, S0358: 1, S0410: 1, H0637: 1, H0441: 1, H0455: 1, T0082: 1, H0615: 1, S0440: 1, H0633: 1, S0344: 1, S0426: 1, H0529: 1, L0770: 1, L0769: 1, L0637: 1, L0374: 1, L0771: 1, L0648: 1, L0662: 1, L0766: 1, L0650: 1, L0774: 1, L0775: 1, L0805: 1, L0776: 1, L0655: 1, L0542: 1, L0782: 1, L0809: 1, L0666: 1, L0664: 1, L0665: 1, L0352: 1, H0648: 1, H0521: 1, H0696: 1, S0406: 1, L0740: 1, L0749: 1, L0731: 1 and		

						H0444: 1.		
HFTAU42	1008350	393	987 - 1100	2568		S0360: 2, H0123: 2, L0649: 2, L0803: 2, L0666: 2, L0740: 2, L0747: 2, L0750: 2, L0755: 2, H0624: 1, S0418: 1, H0393: 1, H0553: 1, H0124: 1, H0090: 1, S0440: 1, H0646: 1, S0142: 1, L0662: 1, L0776: 1, L0659: 1, L0665: 1, L0438: 1, H0547: 1, H0519: 1, H0659: 1, H0658: 1, H0648: 1, L0777: 1, L0752: 1, H0445: 1, L0599: 1, S0242: 1 and H0542: 1.		
HETDA81	1008358	394	3 - 377	2569	Thr-5 to Ser-12, Thr-74 to Pro-80.	H0046: 2 and H0648: 1.		
HODEI92	1008359	395	1 - 495	2570	His-31 to Asp-45, Glu-56 to Ser-64, Pro-118 to Asp-131.	L0747: 4, L0751: 3, H0615: 2, L0794: 2, L0665: 2, H0659: 2, L0777: 2, L0596: 2, H0341: 1, H0333: 1, H0510: 1, H0328: 1, H0039: 1, L0764: 1, L0657: 1, H0658: 1, S0328: 1 and L0758: 1.		
HODEB58	1008372	396	3 - 455	2571	Thr-25 to Ser-36.	H0360: 14, L0809: 11,		

		L0747: 9, L0749: 9, L0777: 9, L0803: 8, L0731: 8, L0774: 7, L0794: 6, S0408: 5, L0783: 5, L0775: 4, L0438: 4, H0648: 4, L0756: 4, L0623: 3, H0575: 3, L0471: 3, H0373: 3, H0615: 3, L0520: 3, L0768: 3, S0126: 3, S0328: 3, S0406: 3, L0779: 3, L0758: 3, S0116: 2, S0444: 2, S0360: 2, H0393: 2, S0222: 2, H0156: 2, T0082: 2, H0052: 2, H0014: 2, H0494: 2, S0440: 2, L0763: 2, L0769: 2, L0764: 2, L0517: 2, H0684: 2, H0670: 2, H0672: 2, H0539: 2, L0740: 2, L0753: 2, L0757: 2, L0759: 2, S0031: 2, L0588: 2, L0581: 2, L0595: 2, S0424: 2, H0171: 1, T0002: 1, H0218: 1, H0685: 1, S0342: 1, S0402: 1, T0049: 1,				

		H0657: 1, S0001: 1, S0282: 1, L0481: 1, H0638: 1, S0356: 1, S0442: 1, S0358: 1, S0410: 1, H0580: 1, H0722: 1, S0045: 1, S0046: 1, S0132: 1, H0549: 1, H0592: 1, H0574: 1, T0060: 1, H0013: 1, S0474: 1, H0581: 1, H0230: 1, H0251: 1, H0309: 1, H0596: 1, H0050: 1, H0242: 1, H0320: 1, L0163: 1, S0051: 1, T0010: 1, S6028: 1, H0179: 1, S0003: 1, H0039: 1, H0644: 1, L0142: 1, H0181: 1, H0617: 1, H0674: 1, S0036: 1, H0591: 1, H0616: 1, H0412: 1, H0202: 1, H0560: 1, S0438: 1, S0144: 1, S0422: 1, S0426: 1, L0772: 1, L0800: 1, L0773: 1, L0521: 1, L0662: 1, L0767: 1, L0766: 1, L5574: 1, L0522: 1, L0804: 1,			

						L0653: 1, L0776: 1, L0659: 1, L0526: 1, L0782: 1, L5622: 1, L0788: 1, H0689: 1, H0690: 1, H0682: 1, H0658: 1, S0378: 1, H0696: 1, H0134: 1, S0404: 1, H0727: 1, S0028: 1, L0742: 1, L0752: 1, S0434: 1, L0589: 1, S0192: 1, H0423: 1, H0422: 1 and S0458: 1.		
HODEG86	1008379	397	411 - 548	2572		H0615: 3		
HODFA57	1008396	398	138 - 221	2573	Lys-1 to Lys-6, Leu-10 to Asp-17, Pro-19 to Arg-28.	H0615: 4		
HODFB31	1008401	399	1 - 276	2574	Pro-35 to Lys-40, Glu-72 to Gly-77, Pro-85 to Val-90.	H0615: 2, S0278: 1, S0002: 1, H0555: 1 and S0026: 1.		
HTEMP79	1008406	400	317 - 658	2575	Leu-14 to Ser-19.	L0758: 6, L0779: 4, H0038: 3, H0616: 2, L0593: 2, H0644: 1, L0794: 1 and L0594: 1.		
HODEI59	1008423	401	161 - 1291	2576	His-6 to Ser-11, Ser-122 to Asn-128, Leu-216 to Asp-221, Ser-323 to His-328.	H0031: 12, H0521: 11, H0542: 11, L0745: 9, H0266: 7, H0547: 7, H0551: 6, H0013: 5, S0152: 5, T0049: 4, H0169: 4, H0494: 4,	20q12-q13.1	256540, 600281, 600281

		L0748: 4, L0591: 4, H0661: 3, H0251: 3, H0046: 3, H0644: 3, H0591: 3, S0002: 3, H0520: 3, S0126: 3, S0028: 3, L0439: 3, L0754: 3, L0757: 3, L0596: 3, H0423: 3, H0171: 2, S0134: 2, S0354: 2, S0358: 2, H0580: 2, S0046: 2, H0587: 2, H0497: 2, T0039: 2, H0599: 2, H0050: 2, L0471: 2, T0010: 2, H0615: 2, H0039: 2, H0090: 2, H0038: 2, H0040: 2, H0488: 2, T0042: 2, S0150: 2, H0529: 2, L0649: 2, L0659: 2, L0438: 2, H0519: 2, H0660: 2, H0555: 2, S3014: 2, S0027: 2, L0777: 2, L0593: 2, L0601: 2, H0653: 2, H0543: 2, H0170: 1, H0556: 1, H0341: 1, S0001: 1, H0664: 1, H0662: 1, H0638: 1, S0418: 1, S0420: 1,			

		S0356: 1, H0619: 1, H0393: 1, S0278: 1, H0431: 1, H0608: 1, H0442: 1, H0586: 1, H0643: 1, H0486: 1, H0156: 1, H0575: 1, H0036: 1, S0346: 1, H0581: 1, H0052: 1, H0263: 1, H0544: 1, H0123: 1, H0011: 1, H0014: 1, H0355: 1, H0375: 1, H0188: 1, H0687: 1, H0292: 1, H0328: 1, H0428: 1, H0622: 1, T0023: 1, H0628: 1, H0383: 1, H0165: 1, L0455: 1, H0124: 1, H0135: 1, H0268: 1, H0623: 1, H0100: 1, H0429: 1, H0561: 1, H0509: 1, H0646: 1, H0538: 1, L0800: 1, L0626: 1, L0387: 1, L0654: 1, H0701: 1, H0593: 1, H0711: 1, H0690: 1, H0435: 1, H0658: 1, H0672: 1, L0602: 1, S0206: 1, L0751: 1, L0746: 1, L0731: 1,			

						H0444: 1, H0445: 1, S0434: 1, L0587: 1, L0588: 1, L0581: 1, L0604: 1, L0594: 1, S0196: 1, H0506: 1 and H0293: 1.		
HODEF94	1008429	402	2 - 94	2577	Pro-19 to Ser-29.	H0615: 2, H0090: 1, S0002: 1 and H0478: 1.		
HPFCZ53	1008445	403	236 - 769	2578	Lys-1 to Lys-23.	L0754: 40, L0740: 8, H0295: 2, H0663: 2, H0169: 2, H0068: 2, L0770: 2, L0662: 2, L0789: 2, L0748: 2, L0751: 2, L0755: 2, L0589: 2, S0420: 1, L0005: 1, H0586: 1, H0156: 1, H0032: 1, H0100: 1, H0494: 1, L0803: 1, L0806: 1, L0809: 1, H0660: 1, H0672: 1, S0152: 1, L0744: 1, L0779: 1, L0777: 1, L0780: 1, L0591: 1, L0593: 1 and L0601: 1.	6p24	134570
HWACN71	1008764	404	96 - 1268	2579	Val-7 to Gly-14, Lys-46 to Ala-52, Leu-82 to Phe-89, Lys-94 to Ser-99, Pro-101 to Arg-108,	AR096: 7, AR053: 5, AR089: 4, AR039: 3, AR060: 2, AR055: 2, AR052: 2, AR033: 2, AR061: 2, AR104: 2		

					Ala-123 to Gly-129, Lys-154 to Gly-164, Arg-274 to Glu-287, Asp-294 to Thr-309, Gln-324 to Ala-334, Pro-343 to Asn-359, Lys-368 to Glu-385.	H0457: 2, H0494: 2, H0740: 1, H0581: 1, H0083: 1, L0770: 1, L0769: 1, L0764: 1, L0791: 1 and H0727: 1.		
HOFMU69	1009017	405	342 - 1151	2580	Ser-70 to Trp-88, Lys-154 to Asp-161, Tyr-265 to Lys-270.	AR039: 17, AR052: 11, AR104: 7, AR033: 7, AR096: 7, AR053: 6, AR089: 6, AR060: 3, AR061: 3, AR055: 3 H0415: 2		
HSKNP59	1009095	406	417 - 554	2581	Pro-10 to Pro-16.	AR039: 15, AR089: 10, AR053: 10, AR096: 9, AR055: 8, AR060: 7, AR033: 6, AR061: 5, AR104: 4 L0510: 3, L0504: 1, L0502: 1, L0499: 1, L0514: 1, L0512: 1 and S3012: 1.		
HETBR71	1009343	407	155 - 658	2582	Lys-5 to Phe-58.	L0731: 10, L0759: 6, L0782: 4, L0774: 3, H0046: 2, H0620: 2, L0598: 2, L0769: 2, L0805: 2, L0663: 2, S0380: 2, L0754: 2, L0756: 2, H0170: 1,	Xq22.1	301201, 301835, 311850

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HE2ES17	1009349	408	3 - 914	2583	Glu-1 to Glu-13.	L0663: 3, L0740: 3, L0752: 3, L0758: 3, L0759: 3, L0664: 2, L0665: 2, L0439: 2, L0756: 2, H0624: 1, H0170: 1, H0685: 1, S0003: 1, H0615: 1, H0644: 1, H0616: 1,	

						L0598: 1, L0649: 1, L0666: 1, H0660: 1, H0648: 1, H0672: 1, H0696: 1, H0555: 1, L0779: 1, L0755: 1, L0592: 1 and S0192: 1.		
HELHM06	1009362	409	14 - 349	2584	Asp-57 to Ala-62, Gly-98 to Pro-112.	S0045: 1		
HE2AG50	1009365	410	43 - 132	2585	Gly-1 to Ser-6, Pro-20 to Ile-30.	AR089: 1, AR033: 1, AR060: 0, AR096: 0, AR061: 0, AR055: 0, AR039: 0 H0170: 1, H0574: 1, H0052: 1, H0048: 1 and L0766: 1.		
HE2ES61	1009388	411	555 - 427	2586		H0305: 2, L0663: 2, H0170: 1, S0003: 1, L0803: 1 and H0651: 1.		
HE2SO43	1009398	412	1 - 408	2587	Pro-65 to Lys-70, His-112 to Gly-131.	H0624: 1		
HLHCI07	1009403	413	91 - 2	2588	Arg-5 to Gly-11.	H0208: 1, H0123: 1 and H0024: 1.	13q	
HTTBR65	1009414	414	1 - 357	2589	Gly-3 to Thr-9, Arg-30 to Gly-39.	H0305: 1 and H0040: 1.	17q21	109270, 109270, 109270, 109270, 109270, 113705, 113705, 144200,

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						H0328: 1, H0615: 1, H0169: 1, L0807: 1 and L0754: 1.		
HPFCV71	1009453	415	434 - 586	2590				
HCABR46	1009479	416	169 - 423	2591	Ala-9 to Glu-19, Glu-40 to Asn-46, Asp-55 to Ser-66.	H0125: 1	19p13.2	108725, 120700, 133171, 143890, 147670,

								147670, 147670, 151440, 164953, 231670, 600276, 600957, 601843
HCRCB80	1009482	417	78 - 479	2592	Gln-34 to Ala-45, Glu-47 to Leu-52, Lys-113 to Gln-121.	H0170: 1, H0327: 1, H0038: 1, L0758: 1 and S0276: 1.	22q13.2-q13.31	188826, 250100, 250800, 250800
HPMLW78	1009833	418	1 - 648	2593	Asn-12 to Tyr-19, Glu-33 to Glu-38, Arg-53 to Ser-62.	L0769: 4, L0751: 4, L0471: 2, H0024: 2, L0768: 2, L0748: 2, L0731: 2, L0595: 2, H0685: 1, S0001: 1, H0052: 1, H0050: 1, H0012: 1, H0644: 1, H0617: 1, H0040: 1, H0100: 1, L0637: 1, L0662: 1, L0809: 1, L0665: 1, H0547: 1, H0519: 1, L0780: 1 and L0591: 1.	1q23	104770, 107300, 107670, 131210, 134638, 136132, 145001, 146740, 146740, 146740, 146790, 173610, 176310, 186780, 191030, 227400, 227400, 601412,

								601652, 602491
HODJK75	1009842	419	3 - 428	2594	Ala-26 to Ile-34.	H0615: 2		
HODJX27	1009854	420	1 - 123	2595	Ser-27 to Gly-32.	H0615: 1		
HODJV85	1009857	421	366 - 166	2596	Asp-1 to Gly-9, Glu-17 to Lys-23.	H0615: 1		
HOOJO38	1009918	422	718 - 116	2597	Ala-76 to Lys-87, Glu-110 to Gln-115, Ser-123 to Lys-131, Lys-168 to Ala-174, Pro-178 to Ala-193, Ala-196 to Ala-201.	L0493: 55, L0504: 46, L0512: 42, L0510: 41, L0507: 39, L0509: 35, L0511: 30, L0502: 29, L0500: 25, L0499: 20, L0503: 19, L0498: 13, L0514: 13, H0648: 13, L0506: 10, H0341: 9, H0046: 7, L0505: 7, L0497: 7, H0670: 7, L0520: 6, H0659: 6, S0380: 6, L0508: 5, S0027: 5, S0114: 4, H0657: 4, S0045: 4, H0100: 4, L0515: 4, L0526: 4, L0664: 4, S0126: 4, H0658: 4, S0378: 4, S0028: 4, L0588: 4, L0362: 4, S0026: 4, H0333: 3, H0318: 3, H0090: 3, H0413: 3, S0142: 3, L0646: 3, S0374: 3, H0689: 3, L0750: 3,		

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					11q13		
HAOSI69	1009949	423	1 - 1155	2598	L0757: 22, L0601: 20, L0747: 14, S0152: 13, L0740: 13, H0617: 10, L0748: 10, L0777: 9, H0623: 7, S0126: 6, S0212: 5, S0360: 5, L0771: 5, L0744: 5, L0759: 5, L0596: 5, H0624: 4, H0549: 4,		

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HSDIY67	1010157	424	3 - 692	2599	Ala-7 to Arg-18, Pro-37 to Asp-43, Asn-96 to Arg-103, Lys-115 to Ser-122,	H0658: 4, H0551: 3, L0439: 3, H0686: 2, H0441: 2, H0013: 2, S0152: 2, L0744: 2,		

					Ile-162 to Asn-168, Arg-179 to Asp-189, Asp-206 to Asn-215, Glu-222 to Val-230.	L0759: 2, S0260: 2, S0360: 1, S0045: 1, L0394: 1, H0009: 1, L0471: 1, H0012: 1, H0620: 1, T0003: 1, H0188: 1, H0428: 1, L0564: 1, L0763: 1, L0770: 1, L0769: 1, L0637: 1, L0646: 1, L0643: 1, L0775: 1, L0805: 1, S0028: 1, L0779: 1, L0592: 1, S0276: 1, S0412: 1 and H0506: 1.	
HSDZM65	1010299	425	2 - 337	2600	Ser-18 to Thr-23, Val-91 to Gln-99.	L0758: 8, L0803: 6, L0740: 6, L0809: 5, L0794: 4, L0756: 4, L0752: 4, S0360: 3, H0551: 3, L0527: 3, L0783: 3, H0689: 3, L0777: 3, L0731: 3, T0049: 2, S0222: 2, S0049: 2, H0163: 2, L0766: 2, L0804: 2, L0659: 2, L0518: 2, L0438: 2, H0547: 2, H0521: 2, H0696: 2, L0779: 2, L0485: 2, H0170: 1, H0171: 1, H0656: 1, H0381: 1,	

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HPDOC39	1010400	426	144 - 608	2601	Ser-16 to Val-25, His-105 to Lys-125, Tyr-147 to Ser-155.	S0446: 1 and H0506: 1. S0360: 8, S0358: 7, H0547: 6, H0561: 5, S0126: 5, S0418: 4, L0766: 4, L0748: 4, L0755: 4, L0362: 4, H0686: 3, H0591: 3, H0521: 3, L0740: 3, L0777: 3, L0752: 3, L0731: 3, L0758: 3, H0445: 3, L0595: 3, S0196: 3, H0656: 2, H0663: 2, S0356: 2, S0376: 2, S0444: 2, S0046: 2, S0278: 2, H0331: 2, H0574: 2, H0581: 2, H0052: 2, H0046: 2, H0266: 2, S0003: 2, H0090: 2, H0623: 2, T0042: 2, H0494: 2, L0768: 2, L0803: 2, L0659: 2, L0809: 2, H0144: 2, H0520: 2, H0522: 2, L0439: 2, L0596: 2, L0591: 2, L0601: 2, H0136: 2, S0242: 2, H0423: 2, H0265: 1, H0341: 1, S0001: 1, H0305: 1, H0589: 1,			

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HE2PS15	1010525	427	3 - 236	2602	Gly-1 to Asp-8, Asp-62 to Ala-67.	AR104: 72, AR060: 48, AR089: 29, AR055: 25, AR096: 16, AR061: 10 L0755: 9, L0757: 8, L0519: 6, L0748: 6, L0763: 5, L0774: 5, L0779: 5, H0657: 4, S0222: 4, L0471: 4, L0766: 4, H0670: 4, L0588: 4, S0408: 3, S0438: 3, L0520: 3, L0769: 3, S0374: 3, H0352: 3, H0686: 2, H0341: 2, S0444: 2, S0360: 2, S0046: 2, H0261: 2, H0333: 2, L0622: 2, H0494: 2, S0422: 2, L0767: 2, L0768: 2, L0775: 2, L0809: 2, H0659: 2, S0328: 2, H0696: 2, S0406: 2, L0747: 2, L0750: 2, L0731: 2,	14q32.33		144120, 147020, 147110

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HTTKH22	1010596	428	266 - 1396	2603	Ser-42 to Pro-49, Asp-86 to Gly-92, Lys-97 to Glu-109.	H0670: 4, H0616: 3, L0439: 3, L0758: 3, S0354: 2, H0038: 2, S0116: 1, H0402: 1, H0637: 1, S0474: 1, H0644: 1, H0673: 1, S0366: 1, H0634: 1, L0351: 1, L0638: 1, L0764: 1, L0766: 1, L0803: 1, L0775: 1, L0805: 1, L0792: 1, L0666: 1, H0520: 1, L0780: 1 and H0542: 1.		
HNOJG33	1010698	429	1209 - 490	2604	Arg-1 to Pro-15, Ser-146 to Arg-155, Leu-168 to Asp-174, Lys-181 to Thr-186,	S0040: 3, L0748: 3, S0356: 2, S0358: 2, S0360: 2, H0416: 2, L0752: 2, H0624: 1,	12q13-q14	107777, 123829, 123940, 139350,

				Phe-226 to Pro-236.	H0265: 1, H0556: 1, S0116: 1, H0255: 1, S0376: 1, S0278: 1, H0575: 1, H0251: 1, L0471: 1, H0373: 1, S0051: 1, H0356: 1, H0687: 1, H0288: 1, H0252: 1, H0135: 1, H0634: 1, H0551: 1, S0210: 1, L0438: 1, H0658: 1, H0666: 1, S0330: 1, S3014: 1, L0744: 1, L0439: 1, L0745: 1, S0260: 1, H0595: 1 and S0196: 1.		139350, 147570, 148040, 148041, 148043, 148070, 181430, 231550, 252940, 264700, 600194, 600231, 600536, 600808, 600956, 601284, 601769, 601769, 601928, 602116, 602153
HPDVK48	1011090	430	1085 - 1630	2605	Lys-14 to Ala-21, Ser-23 to Lys-31, Glu-38 to Gln-47, Arg-72 to Leu-78, Gln-87 to Asn-94, Ser-110 to Lys-118, Glu-172 to Lys-182.	H0650: 2, H0253: 2, L0769: 2, S0116: 1, H0333: 1, H0421: 1, H0083: 1, H0166: 1, H0616: 1, S0208: 1, L0645: 1, L0655: 1, L0666: 1, H0547: 1, H0593: 1, H0689: 1, H0658: 1, S0434: 1 and		

HNORJ10	1011186	431	3 - 1628	2606	Asn-42 to Pro-48, Glu-81 to Lys-86, Val-94 to Thr-99, Lys-105 to Asp-111, Phe-129 to Glu-142, Ser-154 to Gln-160, Glu-173 to Ala-182, Gln-209 to Glu-234, Asp-259 to Asp-272, Ser-303 to Pro-311, Thr-321 to Asn-329, Ala-335 to Glu-349, Thr-371 to Gly-389, Gln-395 to Asn-405, Thr-415 to Asn-423, Asn-431 to Ser-443, Lys-475 to Gln-484, Ser-502 to Gly-507, Ile-522 to Asn-527.	H0352: 1. S0003: 17, H0551: 11, L0483: 9, H0547: 9, S0212: 7, S0152: 7, H0521: 7, H0423: 7, L0766: 6, L0666: 6, S0214: 5, S0126: 5, H0543: 5, S0420: 4, S0360: 4, H0411: 4, H0032: 4, H0598: 4, S0422: 4, L0649: 4, L0665: 4, L0757: 4, H0657: 3, S0376: 3, L0717: 3, H0574: 3, H0486: 3, H0069: 3, H0427: 3, H0581: 3, H0046: 3, H0457: 3, H0271: 3, H0622: 3, H0494: 3, L0667: 3, L0655: 3, L0659: 3, H0519: 3, H0672: 3, H0710: 3, L0754: 3, L0759: 3, L0593: 3, L0601: 3, H0422: 3, H0218: 2, S0040: 2, H0713: 2, H0717: 2, H0650: 2, H0656: 2, S0356: 2, S0132: 2, S0222: 2, H0333: 2, H0009: 2, L0157: 2,	14q21-q24	107970, 115650, 182600, 232700, 602086, 602091, 602616

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						L0751: 1, L0779: 1, L0777: 1, L0780: 1, L0753: 1, L0731: 1, H0445: 1, H0595: 1, S0434: 1, S0436: 1, L0591: 1, S0011: 1, H0668: 1, S0196: 1, L0469: 1, S0424: 1 and S0458: 1.		
HPDRG92	1011209	432	1 - 291	2607	Pro-51 to Phe-57, Ser-87 to Thr-94.	H0658: 3, L0748: 3, H0052: 1 and L0741: 1.			
HOFMQ81	1011303	433	2 - 544	2608	His-1 to Gly-12, Ser-27 to Ser-37, Pro-59 to Ser-68, Glu-94 to Ala-102, Ile-129 to Ser-143, Pro-145 to Pro-150.	AR033: 2, AR089: 2, AR039: 2, AR061: 2, AR055: 1, AR096: 1, AR060: 1, AR104: 1, AR053: 0 H0415: 2			
HOFNF27	1011315	434	3 - 680	2609	Pro-10 to Lys-26, Asn-44 to Tyr-53, Arg-104 to Lys-114, Arg-121 to Ala-134, Gly-155 to Thr-177, Gln-201 to Ser-206.	AR053: 3, AR089: 2, AR096: 1, AR060: 1, AR055: 1, AR104: 1, AR033: 1, AR039: 1, AR061: 0 H0415: 3, H0539: 2, H0355: 1 and H0375: 1.			
HOFND52	1011316	435	126 - 542	2610	Pro-9 to Arg-15, Ala-17 to Thr-26, Pro-39 to Lys-45, Asp-54 to Ala-61, Leu-86 to Gly-91, Phe-99 to Thr-106.	AR096: 1, AR060: 1, AR061: 1, AR033: 1, AR089: 1, AR039: 1, AR053: 0, AR055: 0, AR104: 0 H0415: 2			

HOFNL96	1011321	436	3 - 575	2611	Pro-3 to Ala-17, Asn-56 to Asp-62.	H0415: 1		
HOFNF53	1011332	437	2 - 1183	2612	Pro-26 to Arg-32, Gly-68 to Glu-75, Cys-111 to Asp-116.	AR052: 2, AR053: 1, AR089: 1, AR096: 1, AR055: 1, AR039: 1, AR060: 1, AR033: 1, AR061: 1, AR104: 0 H0415: 2		
HOFMU61	1011360	438	62 - 1249	2613	Ala-39 to Thr-44, Thr-171 to Lys-180.	AR052: 1, AR096: 1, AR089: 1, AR060: 1, AR033: 1, AR053: 0, AR061: 0, AR104: 0, AR039: 0, AR055: 0 H0415: 4		
HOFOF35	1011499	439	1 - 639	2614	Ser-13 to Glu-26, Ser-48 to Val-55, Lys-85 to Thr-91, Asp-115 to Asn-126, Asp-169 to Lys-175.	H0415: 2		
HULFJ37	1011537	440	915 - 364	2615		H0620: 11, H0683: 10, H0483: 7, H0046: 7, H0687: 6, S0360: 4, H0012: 4, H0428: 4, L0471: 3, L0665: 3, H0520: 3, H0670: 3, H0672: 3, L0750: 3, H0624: 2, H0662: 2, H0333: 2, H0013: 2, H0530: 2, H0024: 2,	11p11.2	133701, 168500, 171650, 176930, 176930, 600623, 600811, 600958

		H0594: 2, L0381: 2, H0144: 2, H0547: 2, H0435: 2, L0593: 2, L0601: 2, H0352: 2, H0294: 1, H0341: 1, H0661: 1, H0664: 1, H0240: 1, S0354: 1, S0358: 1, S0376: 1, H0675: 1, S0007: 1, S0046: 1, H0369: 1, H0370: 1, H0587: 1, H0497: 1, H0642: 1, H0575: 1, S0049: 1, H0204: 1, H0596: 1, H0178: 1, H0011: 1, H0266: 1, H0290: 1, T0006: 1, H0424: 1, S0364: 1, H0616: 1, H0087: 1, H0412: 1, H0413: 1, H0100: 1, H0647: 1, H0652: 1, S0210: 1, L0369: 1, L0769: 1, L0373: 1, L0771: 1, L0364: 1, L0649: 1, L0775: 1, L0375: 1, L0651: 1, L0776: 1, L0659: 1, L0517: 1, L0783: 1, L0382: 1, L0809: 1, L0519: 1, L0663: 1,		

					S0053: 1, H0519: 1, H0658: 1, H0660: 1, H0666: 1, S0027: 1, L0743: 1, L0740: 1, L0747: 1, L0749: 1, L0779: 1, L0777: 1, L0752: 1, L0753: 1, L0757: 1, L0759: 1, H0445: 1, H0595: 1 and L0595: 1.	11q13.5	133780, 266150, 276903, 276903, 276903
HOFME75	1011607	441	2 - 1024	2616	Arg-1 to Gly-7.	H0415: 5		
HOPKO74	1011608	442	136 - 1482	2617	Arg-6 to Gly-13, Gln-132 to Glu-137, Arg-179 to Ala-200, Ala-209 to Lys-215, Glu-218 to Asp-227, Pro-239 to Lys-244, Tyr-276 to Lys-283, Ile-361 to Asp-367, Met-371 to Asp-376, Asp-391 to Lys-411, Pro-440 to Leu-449.	L0747: 55, H0551: 25, H0135: 24, S0126: 20, H0619: 14, L0750: 14, S0418: 12, S0360: 12, H0547: 12, S0028: 12, L0754: 12, L0659: 11, H0123: 10, L0665: 9, H0693: 9, S3014: 9, S0027: 9, S0040: 8, L0654: 8, L0595: 8, H0050: 7, L0363: 7, L0666: 7, L0601: 7, S0212: 6, L0717: 6, H0599: 6, H0081: 6, H0012: 6, H0024: 6,	11q13.5	133780, 266150, 276903, 276903, 276903

S0250: 6, H0623: 6, H0520: 6, S0390: 6, S0436: 6, L0593: 6, H0645: 5, H0545: 5, L0483: 5, H0553: 5, H0040: 5, L0770: 5, L0565: 5, H0519: 5, H0684: 5, S0037: 5, L0743: 5, L0605: 5, S0342: 4, S0420: 4, S0376: 4, S0045: 4, S0046: 4, H0486: 4, H0266: 4, H0286: 4, H0100: 4, L0769: 4, L5565: 4, L0662: 4, L0649: 4, L0776: 4, L0663: 4, H0658: 4, L0749: 4, L0731: 4, L0757: 4, L0597: 4, L0591: 4, H0352: 4, H0624: 3, H0265: 3, H0556: 3, S0476: 3, H0013: 3, H0253: 3, H0544: 3, H0428: 3, H0031: 3, H0644: 3, L0762: 3, L0637: 3, L5566: 3, L0768: 3, L0775: 3, L0375: 3, L0657: 3, L0664: 3, S0152: 3, L0744: 3,							

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		H0730: 1, H0734: 1, H0437: 1, H0550: 1, H0441: 1, H0431: 1, H0392: 1, H0249: 1, H0586: 1, H0587: 1, H0497: 1, H0632: 1, T0114: 1, H0156: 1, L0021: 1, H0575: 1, T0048: 1, H0318: 1, S0049: 1, H0309: 1, H0546: 1, H0041: 1, H0172: 1, H0620: 1, T0003: 1, H0057: 1, H0051: 1, H0375: 1, H0687: 1, H0290: 1, H0284: 1, H0252: 1, H0604: 1, H0628: 1, H0617: 1, H0606: 1, H0598: 1, H0063: 1, H0087: 1, H0056: 1, H0494: 1, H0560: 1, H0359: 1, H0561: 1, S0306: 1, H0647: 1, H0646: 1, S0208: 1, S0002: 1, L0369: 1, L0763: 1, L0772: 1, L0641: 1, L0642: 1, L0643: 1, L0764: 1, L0765: 1, L0648: 1, L0650: 1, L0774: 1,			

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HCBBA51	1011755	443	57 - 266	2618	Pro-11 to Phe-16, Thr-48 to Ser-60.	H0659: 16, L0747: 15, S0358: 14, L0005: 13, L0758: 9, S0360: 8, L0775: 8, H0648: 8, H0657: 6, L0731: 6, L0757: 6, H0341: 5, H0412: 5, S0440: 5, H0658: 5, H0710: 5, L0750: 5, L0588: 5, S0007: 4, S0046: 4, H0599: 4, L0520: 4, L0764: 4, L0768: 4, H0170: 3, H0306: 3, H0125: 3, S0408: 3,	

		H0309: 3, H0039: 3, H0617: 3, H0413: 3, L0809: 3, L0519: 3, S0126: 3, S0406: 3, H0576: 3, H0422: 3, S0134: 2, L0808: 2, S0116: 2, H0661: 2, H0663: 2, H0393: 2, L0394: 2, S0222: 2, H0586: 2, L0622: 2, L0623: 2, H0486: 2, T0109: 2, S0280: 2, H0581: 2, H0596: 2, H0231: 2, S0003: 2, T0006: 2, H0674: 2, H0598: 2, H0100: 2, S0438: 2, H0633: 2, L0772: 2, L0521: 2, L0767: 2, H0144: 2, S0374: 2, H0672: 2, S0328: 2, S0330: 2, S0152: 2, S0032: 2, L0755: 2, L0759: 2, S0031: 2, H0595: 2, S0026: 2, T0002: 1, H0686: 1, H0685: 1, S6024: 1, H0294: 1, T0049: 1, S0282: 1, H0255: 1, H0669: 1, H0664: 1, H0177: 1,				

		S0376: 1, S0444: 1, S0410: 1, S0045: 1, S0132: 1, H0411: 1, S0278: 1, S6022: 1, H0441: 1, H0609: 1, T0039: 1, H0013: 1, H0635: 1, H0042: 1, T0048: 1, H0421: 1, H0173: 1, H0052: 1, H0204: 1, H0597: 1, H0044: 1, H0546: 1, H0046: 1, H0150: 1, H0009: 1, H0023: 1, H0373: 1, L0163: 1, H0201: 1, S0048: 1, S0388: 1, S0051: 1, H0408: 1, H0238: 1, H0622: 1, T0023: 1, H0031: 1, H0606: 1, H0673: 1, H0163: 1, H0040: 1, H0634: 1, H0616: 1, T0069: 1, T0041: 1, H0494: 1, H0646: 1, S0144: 1, S0142: 1, S0344: 1, L0598: 1, L0762: 1, L0763: 1, L0769: 1, L0637: 1, L0761: 1, L0373: 1, L0773: 1, L0522: 1, L0803: 1,				

						L0774: 1, L0375: 1, L0653: 1, L0542: 1, L0782: 1, L0783: 1, L0789: 1, S0428: 1, S0053: 1, H0690: 1, H0682: 1, H0670: 1, H0651: 1, S0378: 1, S0380: 1, H0134: 1, H0436: 1, S0027: 1, L0751: 1, S0260: 1, H0445: 1, S0394: 1, S0011: 1, H0653: 1, H0136: 1, S0194: 1 and H0423: 1.		
HDHEB13	1011773	444	31 - 972	2619	Gly-1 to Glu-11, Arg-54 to Ser-60, Pro-68 to Gly-78, Pro-92 to Gly-126, Ala-134 to Asn-143, Thr-145 to Gly-162, Gly-173 to Ser-179, Lys-187 to Leu-194, Glu-205 to Ser-213, Ser-283 to Phe-289, Ala-306 to Glu-313.	L0777: 4, L0747: 3, S0007: 1, H0351: 1, H0550: 1, H0013: 1, H0570: 1, H0123: 1, H0019: 1, H0012: 1, H0553: 1, L0794: 1, L0759: 1 and H0352: 1.		
HDTMG36	1011821	445	3 - 248	2620	Pro-28 to Gln-35, Leu-71 to Pro-77.			
HVVCJ38	1011830	446	2 - 817	2621	Thr-121 to Asn-126, Ala-134 to Ala-140, Arg-174 to Arg-184,	L0771: 5, L0439: 5, L0761: 4, L0794: 4, L0809: 4, L0666: 4,		

					Ser-194 to Glu-199, Met-208 to Gln-217, Arg-258 to Gly-263.	L0743: 4, L0758: 4, H0661: 3, H0638: 3, H0618: 3, L0770: 3, L0803: 3, L0659: 3, L0790: 3, H0662: 2, H0181: 2, S0144: 2, S0142: 2, L0800: 2, L0663: 2, H0539: 2, L0740: 2, L0750: 2, H0713: 1, H0583: 1, S0212: 1, H0483: 1, H0402: 1, S0418: 1, S0356: 1, S0360: 1, S0222: 1, H0486: 1, T0109: 1, H0250: 1, H0575: 1, H0253: 1, H0052: 1, H0194: 1, H0544: 1, H0546: 1, H0545: 1, H0024: 1, H0355: 1, H0688: 1, H0617: 1, H0124: 1, H0135: 1, H0163: 1, H0413: 1, S0038: 1, T0041: 1, H0509: 1, H0529: 1, L0371: 1, L0769: 1, L0638: 1, L0764: 1, L0648: 1, L0662: 1, L0804: 1, L0775: 1, L0629: 1, L0657: 1, L0656: 1,	

						L0647: 1, L0791: 1, L0438: 1, H0519: 1, H0435: 1, H0658: 1, H0670: 1, H0672: 1, S0328: 1, H0521: 1, H0436: 1, L0741: 1, L0749: 1, L0779: 1, L0759: 1, H0445: 1, S0398: 1 and H0352: 1.		
HPAMY22	1011840	447	1 - 180	2622	Pro-18 to Gln-36, Ser-43 to Ala-57.	H0682: 1		
HE9CP86	1011847	448	107 - 727	2623	Arg-13 to Arg-19, Asp-37 to Asp-43, Glu-127 to Asp-132, Asn-152 to Glu-171, Ala-179 to Ala-193.	L0748: 18, L0749: 8, L0755: 7, H0686: 4, S0360: 3, H0519: 3, H0659: 3, L0747: 3, L0758: 3, H0341: 2, H0622: 2, H0040: 2, H0616: 2, L0772: 2, L0375: 2, L0754: 2, L0779: 2, H0542: 2, H0294: 1, H0657: 1, H0656: 1, S0116: 1, H0663: 1, H0638: 1, S0376: 1, H0393: 1, H0083: 1, H0030: 1, L0055: 1, H0068: 1, H0591: 1, H0038: 1, H0412: 1, H0100: 1, L0475: 1, S0422: 1, L0763: 1, L0771: 1,		

						L0767: 1, L0768: 1, L0784: 1, L0776: 1, L0633: 1, L0783: 1, L0665: 1, H0144: 1, H0682: 1, S0378: 1, H0627: 1, L0752: 1, L0731: 1, S0026: 1, H0665: 1, S0242: 1 and H0543: 1.		
HPDOU46	1011883	449	24 - 692	2624		H0658: 2, L0750: 2, L0806: 1, L0790: 1 and L0779: 1.		
HFCDW73	1011901	450	3 - 425	2625		H0575: 1 and H0009: 1.		
HOVEB13	1011919	451	21 - 905	2626	Val-7 to Ser-12, Leu-79 to Asn-87, Lys-120 to Ala-125, Ala-166 to Arg-171, Lys-208 to Phe-217, Gln-234 to Pro-241, Asp-285 to Gln-290.	AR033: 6, AR089: 5, AR096: 4, AR055: 3, AR052: 3, AR060: 3, AR053: 2, AR061: 2, AR039: 1, AR104: 0 L0779: 4, H0428: 3, L0773: 2, L0662: 2, L0659: 2, L0602: 2, L0777: 2, L0596: 2, L0608: 2, H0170: 1, H0580: 1, S0045: 1, T0048: 1, H0052: 1, L0471: 1, H0628: 1, L0770: 1, L0761: 1, L0805: 1, L0653: 1, L0657: 1, L0512: 1,		

					H0682: 1, H0672: 1, L0748: 1, L0740: 1, L0749: 1, L0757: 1, S0031: 1, H0543: 1 and H0677: 1.		
HPAMS93	1011948	452	74 - 1114	2627	L0754: 8, L0766: 6, L0439: 6, S0414: 4, L0758: 4, S0360: 3, L0803: 3, L0666: 3, L0756: 3, L0731: 3, S0218: 2, H0676: 2, H0251: 2, H0457: 2, H0083: 2, H0038: 2, H0616: 2, L0770: 2, L0775: 2, H0144: 2, H0682: 2, H0436: 2, L0752: 2, L0485: 2, L0594: 2, H0624: 1, S0430: 1, H0657: 1, H0341: 1, S0358: 1, H0411: 1, H0431: 1, T0039: 1, H0013: 1, L0021: 1, H0194: 1, H0050: 1, H0020: 1, H0051: 1, H0375: 1, H0594: 1, S0003: 1, H0272: 1, S0386: 1, H0494: 1, S0438: 1, H0652: 1, S0422: 1, H0529: 1, L0765: 1,		

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HCRBN71	1011966	453	1 - 420	2628	L0776: 6, L0766: 5, L0777: 3, L0758: 3, L0755: 2, H0327: 1, L0768: 1, L0805: 1, L0655: 1, L0788: 1, H0648: 1, H0672: 1, S0406: 1, L0747: 1, L0752: 1, L0757: 1 and S0196: 1.			
HCRNC60	1012005	454	637 - 1302	2629	Pro-16 to Asp-25, Arg-44 to Glu-50, Ser-63 to Arg-69, Glu-108 to Arg-115, Lys-122 to Gly-136, Arg-143 to Met-151,	L0471: 11, H0251: 9, L0163: 7, H0599: 5, H0295: 4, H0373: 4, S0210: 4, S0126: 3, S0356: 2, S0358: 2, H0619: 2, H0012: 2,	15q22.1	151670, 191010, 601780

					Asp-167 to Glu-173, Asp-185 to Glu-194, Thr-206 to Asp-213.	H0628: 2, S0364: 2, H0551: 2, H0519: 2, S0026: 2, H0170: 1, T0049: 1, S0134: 1, H0656: 1, H0662: 1, S0418: 1, S0420: 1, S0354: 1, S0360: 1, T0008: 1, H0411: 1, H0431: 1, H0432: 1, H0592: 1, S0005: 1, H0574: 1, H0270: 1, T0039: 1, H0013: 1, H0002: 1, H0036: 1, S0010: 1, S0474: 1, H0196: 1, T0115: 1, H0597: 1, H0545: 1, H0050: 1, H0024: 1, S0362: 1, H0200: 1, H0266: 1, S0022: 1, H0252: 1, H0039: 1, H0644: 1, H0032: 1, S0366: 1, H0090: 1, H0591: 1, T0041: 1, T0042: 1, H0509: 1, S0374: 1, H0520: 1, H0670: 1, H0651: 1, H0539: 1, S0380: 1, S0044: 1, S0118: 1, S0028: 1, L0748: 1, L0757: 1, L0588: 1,		

HSPSJ24	1012064	455	284 - 925	2630	Pro-83 to Gln-90, Ala-123 to Gly-131, Glu-174 to Pro-183.	S0011: 1, H0653: 1, H0665: 1, S0242: 1 and H0506: 1.	14q11.2	182600, 186880, 190195, 190195, 222700, 600243, 602279, 602279
						S0358: 2, S0360: 2, H0251: 2, H0622: 2, S0144: 2, L0659: 2, L0751: 2, L0777: 2, H0265: 1, S0134: 1, H0657: 1, H0486: 1, H0575: 1, S0010: 1, H0581: 1, H0052: 1, H0085: 1, H0266: 1, H0687: 1, H0644: 1, H0617: 1, L0662: 1, L0766: 1, L0549: 1, L0774: 1, L0775: 1, L0806: 1, L0657: 1, L0382: 1, H0683: 1, H0522: 1, H0555: 1, H0576: 1, L0754: 1, L0749: 1, L0758: 1, L0599: 1 and S0446: 1.		
HPCPB22	1012076	456	3 - 554	2631	Arg-88 to Lys-93, Tyr-101 to Gly-107, Arg-169 to Pro-184.	H0659: 2 and L0378: 1.		
HOVDZ22	1012136	457	2 - 169	2632	Tyr-1 to Gly-13.	H0529: 7, L0766: 6, L0809: 6, L0777: 5, H0428: 3, H0656: 2, H0013: 2, H0620: 2, L0806: 2, L0665: 2,		

							H0547: 2, L0748: 2, L0747: 2, L0756: 2, L0601: 2, H0484: 1, H0192: 1, S0420: 1, S0358: 1, H0575: 1, H0581: 1, H0046: 1, H0012: 1, T0010: 1, H0266: 1, H0622: 1, H0165: 1, H0673: 1, L0456: 1, H0068: 1, H0135: 1, H0087: 1, H0264: 1, H0412: 1, H0560: 1, L0763: 1, L0770: 1, L0771: 1, L0649: 1, L0561: 1, L0375: 1, L0805: 1, L0776: 1, L0518: 1, L0783: 1, L0666: 1, L0663: 1, H0520: 1, H0519: 1, S0126: 1, H0659: 1, H0672: 1, H0539: 1, H0436: 1, S3014: 1, L0741: 1, L0749: 1, L0750: 1, L0779: 1, L0731: 1, L0589: 1, L0581: 1, L0608: 1 and S0011: 1.		
HBZSK53	1012240	458	2 - 721	2633	Pro-6 to Gln-11.		H0584: 59, S0278: 16, S0444: 10, L0775: 10, L0809: 10, H0545: 9,	

S0144: 9, H0670: 9, S0408: 8, S0410: 7, L0761: 7, L0766: 7, L0731: 7, L0757: 7, H0617: 6, L0774: 6, H0656: 5, H0255: 5, S0358: 5, H0559: 5, H0620: 5, L0772: 5, S0328: 5, L0747: 5, H0341: 4, H0546: 4, H0059: 4, L0800: 4, L0754: 4, L0758: 4, H0638: 3, H0580: 3, H0250: 3, S0440: 3, H0652: 3, S0142: 3, L0764: 3, L0653: 3, L0783: 3, S0374: 3, H0522: 3, H0624: 2, H0657: 2, H0402: 2, H0637: 2, H0586: 2, H0486: 2, H0581: 2, L0763: 2, L0770: 2, L0374: 2, L0771: 2, L0773: 2, L0776: 2, L0790: 2, S0052: 2, H0684: 2, S0406: 2, S3014: 2, S0027: 2, L0779: 2, L0777: 2, H0445: 2, L0601: 2, H0167: 1, H0716: 1,							

HBCPH02	1012453	459	3 - 773	2634	Arg-9 to Asp-14,	S0218: 1, L0785: 1, S0116: 1, H0254: 1, H0306: 1, S0442: 1, S0354: 1, S0045: 1, H0549: 1, H0587: 1, H0635: 1, H0575: 1, H0590: 1, S0182: 1, H0318: 1, H0421: 1, H0150: 1, H0123: 1, H0083: 1, H0179: 1, H0628: 1, H0063: 1, H0100: 1, T0042: 1, H0560: 1, H0641: 1, S0344: 1, L0769: 1, L0646: 1, L0644: 1, L0768: 1, L0794: 1, L0806: 1, L0655: 1, L0383: 1, L0791: 1, L0663: 1, S0216: 1, H0699: 1, H0703: 1, H0593: 1, S0126: 1, H0690: 1, H0672: 1, S0190: 1, H0187: 1, H0576: 1, L0611: 1, S0028: 1, L0749: 1, L0750: 1, L0755: 1, H0343: 1, H0668: 1, H0653: 1, H0543: 1 and H0422: 1.	H0032: 3, H0090: 3,		

				Leu-38 to Gly-59, Pro-62 to Thr-75, Met-83 to Val-90, Thr-94 to Ser-105, Pro-109 to Glu-125, Phe-134 to Ser-139, Ile-141 to Lys-162, Cys-166 to Pro-180, Leu-202 to Pro-207, Ile-248 to Asn-253.	S0114: 2, H0123: 2, H0494: 2, H0445: 2, H0663: 1, H0455: 1, H0036: 1, H0457: 1, H0050: 1, H0039: 1, H0212: 1, H0433: 1, L0766: 1, S0206: 1 and L0749: 1.		
HCONM62	1012454	460	20 - 1306	2635		H0521: 181, L0748: 11, H0551: 10, H0617: 8, H0046: 7, L0731: 7, H0623: 6, L0663: 6, H0547: 6, H0265: 5, S0418: 5, H0009: 5, H0553: 5, H0670: 5, L0740: 5, L0759: 5, H0556: 4, S0376: 4, S0046: 4, H0266: 4, H0135: 4, S0344: 4, L0665: 4, S0374: 4, H0689: 4, H0435: 4, H0658: 4, S3014: 4, S0206: 4, L0596: 4, H0543: 4, S0212: 3, H0483: 3, S0410: 3, S0132: 3, H0592: 3, H0012: 3, H0620: 3, H0039: 3, H0488: 3,	7q31	126650, 126650, 164860, 180105, 222800, 246900, 274600, 274600, 602081

L0372: 3, L0764: 3, L0666: 3, H0519: 3, S0027: 3, S0028: 3, L0439: 3, L0750: 3, L0777: 3, H0665: 3, H0656: 2, H0638: 2, L0562: 2, L0539: 2, S0360: 2, H0208: 2, S0045: 2, L0717: 2, H0549: 2, H0586: 2, H0156: 2, H0052: 2, H0545: 2, H0024: 2, H0424: 2, H0213: 2, H0030: 2, H0087: 2, H0100: 2, T0042: 2, H0494: 2, H0560: 2, H0561: 2, S0440: 2, L0369: 2, L0640: 2, L0761: 2, L0646: 2, L0659: 2, L0540: 2, L0382: 2, L0809: 2, L0664: 2, L0438: 2, H0593: 2, H0648: 2, H0555: 2, L0757: 2, L0758: 2, S0434: 2, L0595: 2, S0192: 2, H0423: 2, H0422: 2, H0677: 2, H0624: 1, S0342: 1, S0218: 1, H0650: 1, H0657: 1,							

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HOGEU69	1012459	461	2 - 691	2636	Arg-1 to Ala-11, Ser-118 to Gln-126, Leu-200 to Thr-207, Lys-213 to Ala-218, Glu-225 to Thr-230.	L0740: 13, L0731: 10, L0755: 8, L0752: 6, H0551: 5, L0766: 5, H0672: 5, L0776: 4, L0757: 4, L0759: 4, H0494: 3, L0775: 3,		

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							L0749: 1, L0758: 1, H0445: 1, L0595: 1 and S0192: 1.		
HVVBD93	1012469	462	2 - 829	2637	Gln-3 to Cys-12, Thr-19 to Thr-25.		L0758: 5, L0769: 4, L0766: 3, L0809: 3, L0774: 2, L0790: 2, L0663: 2, L0439: 2, L0752: 2, S0218: 1, H0583: 1, S0442: 1, S6022: 1, H0441: 1, H0574: 1, H0150: 1, S0388: 1, S0364: 1, H0743: 1, L0369: 1, L0770: 1, L0638: 1, L0644: 1, L0764: 1, L0648: 1, L0662: 1, L0794: 1, L0803: 1, L0636: 1, L0368: 1, L0666: 1, L0664: 1, L0565: 1, L0438: 1, H0682: 1, H0672: 1, L0741: 1, L0743: 1, L0748: 1, L0751: 1, L0754: 1, L0747: 1, L0749: 1, L0777: 1, L0759: 1, S0434: 1 and L0592: 1.		
HCOMV86	1012482	463	313 - 834	2638			H0521: 91, H0580: 23, H0522: 22, H0445: 14, H0638: 12, H0656: 11,	6p21.3	106300, 108800, 120290,

				H0486: 8, H0090: 7, H0583: 5, H0125: 5, S0358: 5, H0581: 5, H0591: 5, H0561: 5, H0657: 4, S0442: 4, H0575: 4, H0634: 4, H0134: 4, H0427: 3, H0318: 3, H0050: 3, H0264: 3, H0648: 3, H0518: 3, L0599: 3, H0650: 2, S0376: 2, S0408: 2, H0586: 2, H0069: 2, H0635: 2, H0086: 2, H0252: 2, H0488: 2, H0560: 2, H0641: 2, L0776: 2, H0660: 2, L0748: 2, L0745: 2, S0434: 2, H0265: 1, H0556: 1, S0360: 1, H0676: 1, H0637: 1, H0619: 1, H0393: 1, H0440: 1, H0549: 1, H0431: 1, H0592: 1, H0574: 1, H0250: 1, H0004: 1, H0421: 1, H0242: 1, H0375: 1, H0109: 1, T0023: 1, H0031: 1, H0673: 1, H0376: 1, H0063: 1, S0440: 1,		120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475

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					L0777: 14, L0748: 9, L0747: 7, S0026: 6, S0360: 4, H0519: 4, L0749: 4, L0759: 4, H0677: 4, H0686: 3, H0014: 3, H0090: 3, L0662: 3, L0794: 3, L0766: 3, H0659: 3, S0404: 3, L0439: 3, L0740: 3, L0754: 3, L0750: 3, S0276: 3, H0170: 2, H0171: 2, H0657: 2, H0341: 2, S0212: 2, S0420: 2, S0356: 2, S0444: 2,	8q11	
			2639	Met-8 to Lys-13, Pro-23 to Trp-30.			
		43 - 990					
		464					
	1012519						
HCONJ23							

		S0222: 2, H0392: 2, H0486: 2, H0266: 2, H0032: 2, L0767: 2, L0803: 2, L0805: 2, L0655: 2, L0657: 2, L0659: 2, L0809: 2, H0144: 2, S0374: 2, L0756: 2, L0758: 2, S0436: 2, L0591: 2, L0485: 2, H0556: 1, H0220: 1, H0656: 1, S0001: 1, H0661: 1, H0662: 1, S0358: 1, S0376: 1, S0408: 1, S0410: 1, H0619: 1, H0600: 1, H0643: 1, H0013: 1, H0427: 1, H0156: 1, H0599: 1, H0575: 1, S0010: 1, S0346: 1, H0318: 1, H0251: 1, L0163: 1, S0388: 1, S0051: 1, H0271: 1, H0644: 1, H0111: 1, H0617: 1, H0673: 1, H0169: 1, L0456: 1, H0376: 1, H0598: 1, H0591: 1, H0040: 1, H0063: 1, H0413: 1, T0042: 1, H0560: 1, S0294: 1,			

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HVVBL04	1012536	465	2 - 310	2640	Lys-2 to Glu-13, Asn-39 to Glu-47, Arg-49 to Glu-56, Lys-73 to Arg-85.	H0672: 2		
HVVAF65	1012542	466	3 - 731	2641		L0748: 19, L0439: 7, L0731: 6, L0775: 4, S0356: 2, H0421: 2, H0509: 2, L0805: 2, L0783: 2, L0809: 2,	17q24-q25	114290, 115660, 138033, 139250, 148500,

					S0136: 2, L0740: 2, L0747: 2, L0749: 2, L0599: 2, L0362: 2, H0170: 1, S0470: 1, L0005: 1, S0354: 1, S0376: 1, S0045: 1, S0278: 1, H0642: 1, H0331: 1, H0574: 1, H0036: 1, S0346: 1, H0318: 1, L0157: 1, H0050: 1, L0471: 1, H0024: 1, H0275: 1, H0594: 1, H0267: 1, S0003: 1, H0031: 1, H0412: 1, T0069: 1, H0100: 1, T0041: 1, L0475: 1, S0142: 1, S0002: 1, L0769: 1, L0776: 1, L0655: 1, L0527: 1, L0664: 1, S0374: 1, L0438: 1, H0658: 1, H0672: 1, S0380: 1, S0350: 1, H0521: 1, S0146: 1, L0777: 1, L0752: 1, L0753: 1, L0757: 1 and L0581: 1.			150200, 154275, 162100, 170500, 170500, 170500, 180860, 182452, 230200, 249000, 253250, 264470
HCONN76	1012545	467	1 - 1716	2642	Tyr-1 to Ser-12.	H0423: 16, H0521: 11, L0777: 10, H0622: 9, L0751: 9, H0641: 8,	21q22.3	120220, 120240, 123580,

							151385, 171860, 190685, 236100, 236200, 240300, 267750, 600065, 601072, 601145
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		S0408: 1, H0722: 1, H0282: 1, H0632: 1, H0635: 1, H0427: 1, H0575: 1, S0010: 1, S0346: 1, S0474: 1, H0581: 1, H0251: 1, H0544: 1, L0163: 1, H0051: 1, S0388: 1, H0188: 1, H0687: 1, H0286: 1, T0023: 1, H0604: 1, H0644: 1, H0181: 1, H0617: 1, H0032: 1, H0040: 1, H0634: 1, H0272: 1, H0509: 1, S0142: 1, L0763: 1, L0638: 1, L0372: 1, L0646: 1, L0771: 1, L0774: 1, L0805: 1, L0653: 1, L0776: 1, L0655: 1, L0636: 1, L0782: 1, L0663: 1, H0701: 1, H0690: 1, H0684: 1, H0658: 1, H0666: 1, S0152: 1, S0406: 1, H0555: 1, L0439: 1, L0747: 1, L0749: 1, L0750: 1, L0780: 1, L0755: 1, L0758: 1, S0031: 1, H0445: 1,				

HVVAF56	1012568	468	3 - 1382	2643	Cys-2 to Ser-16, Glu-55 to Lys-61, Pro-83 to Leu-88, Ser-135 to Pro-148, Val-152 to Arg-163, Pro-223 to Thr-230, Ala-242 to Val-253, Arg-258 to Glu-274, Gly-290 to Asp-300, Lys-337 to Asn-345, Asp-373 to Ala-398, Gly-401 to Lys-406, Gln-410 to Ala-430, Pro-433 to Gln-460.	S0434: 1, L0604: 1 and H0542: 1.	L0766: 9, L0777: 9, H0529: 8, H0521: 7, L0731: 7, S0360: 6, L0758: 6, H0494: 5, L0749: 5, L0759: 5, S0376: 4, H0639: 4, S0422: 4, L0665: 4, H0144: 4, H0520: 4, H0547: 4, L0439: 4, H0423: 4, S0424: 4, H0581: 3, L0471: 3, H0266: 3, S0150: 3, L0764: 3, L0803: 3, L0659: 3, L0666: 3, H0519: 3, H0659: 3, H0696: 3, L0755: 3, H0716: 2, H0662: 2, S0356: 2, S0046: 2, H0013: 2, H0545: 2, H0457: 2, H0551: 2, H0100: 2, L0475: 2, L0598: 2, L0763: 2, L0770: 2, L0637: 2, L0772: 2, L0765: 2, L0662: 2, L0649: 2, L0774: 2, L0775: 2, L0776: 2, L0809: 2, H0689: 2, S0406: 2,		

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HODEG95	1012599	469	243 - 749	2644	Arg-33 to Gly-38, Pro-40 to Lys-52.	S0460: 1, H0506: 1 and H0352: 1.	H0615: 2 and H0343: 1.		
HCOOX52	1012600	470	2 - 1567	2645	Arg-41 to Gly-65, Pro-88 to Ser-96, Thr-104 to Thr-141, Glu-209 to Asn-214, Arg-263 to Ser-269, Ser-274 to Ala-279, Lys-290 to Ile-296, Lys-320 to Glu-333, Val-517 to Ala-522.	L0581: 63, L0748: 35, H0575: 22, L0599: 19, H0046: 17, L0659: 17, L0745: 16, H0510: 15, L0662: 15, L0665: 15, L0747: 14, H0509: 12, L0744: 12, L0754: 12, H0069: 11, L0751: 11, H0574: 10, L0750: 10, H0031: 9, H0124: 9, L0757: 9, H0150: 8, H0039: 8, S0360: 7, S0132: 7, H0644: 7, S0027: 7, S0212: 6, H0393: 6, H0622: 6, H0591: 6, L0803: 6, L0806: 6, H0658: 6, S0044: 6, S0028: 6, S0358: 5, H0549: 5, H0331: 5, H0427: 5, H0251: 5, H0014: 5, H0687: 5, H0059: 5, L0595: 5, L0600: 5, H0632: 4, H0618: 4, H0200: 4, H0090: 4, H0038: 4, L0770: 4,	11q12-q13.1	106100, 133780, 147050, 259700, 259770, 600045, 601650, 601884

		L0525: 4, L0809: 4, L0663: 4, H0670: 4, H0555: 4, L0758: 4, L0603: 4, H0650: 3, H0663: 3, H0550: 3, T0060: 3, S0280: 3, H0042: 3, S0314: 3, L0142: 3, H0135: 3, L0763: 3, L0372: 3, L0766: 3, L0775: 3, L0666: 3, H0144: 3, H0693: 3, S0126: 3, H0682: 3, S0380: 3, H0436: 3, S0037: 3, L0759: 3, S0031: 3, H0445: 3, L0361: 3, S0011: 3, H0662: 2, H0619: 2, H0333: 2, H0486: 2, H0013: 2, L0021: 2, H0253: 2, S0010: 2, H0309: 2, H0123: 2, H0246: 2, L0163: 2, H0355: 2, H0188: 2, S0312: 2, H0615: 2, H0688: 2, H0424: 2, H0553: 2, H0617: 2, L0455: 2, H0641: 2, H0646: 2, S0422: 2, L0646: 2, L0794: 2, L0804: 2,				

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HVVBR10	1012618	471	3 - 1079	2646	Lys-52 to Ser-59, Lys-121 to Pro-128, Ser-183 to Thr-189.	L0439: 13, L0748: 11, L0601: 8, L0747: 7, L0750: 7, L0438: 5, L0757: 5, L0770: 4, L0769: 4, L0764: 4, L0766: 4, L0731: 4, L0803: 3, L0775: 3, L0666: 3, H0521: 3, L0751: 3, L0758: 3, S0418: 2, H0550: 2, H0013: 2, H0052: 2, H0622: 2, H0494: 2, L0646: 2, L0771: 2, L0774: 2, L0663: 2, L0565: 2, H0593: 2, H0689: 2, H0672: 2, S0328: 2, L0752: 2, L0587: 2, L0600: 2, H0556: 1, H0583: 1, H0656: 1, H0341: 1, S0001: 1, S0360: 1, H0549: 1, H0455: 1, H0586: 1, H0587: 1, H0156: 1, H0253: 1, H0318: 1, H0581: 1, T0110: 1, H0150: 1, H0019: 1, H0050: 1, H0620: 1, S0050: 1, H0422: 1, S0042: 1, H0008: 1 and H0352: 1.		

HVVBK78	1012645	472	44 - 643	2647	Arg-11 to Arg-20.	H0373: 1, H0355: 1, S6028: 1, H0271: 1, S0003: 1, H0252: 1, H0553: 1, H0644: 1, H0124: 1, S0036: 1, H0135: 1, H0616: 1, H0264: 1, H0056: 1, L0435: 1, S0344: 1, S0422: 1, S0002: 1, H0529: 1, L0763: 1, L0372: 1, L0773: 1, L0768: 1, L0794: 1, L0653: 1, L0776: 1, L0655: 1, L0659: 1, L0783: 1, L0792: 1, L0664: 1, L0665: 1, H0144: 1, S0126: 1, H0659: 1, H0658: 1, H0670: 1, S0330: 1, S3012: 1, S0027: 1, L0740: 1, L0754: 1, L0749: 1, L0779: 1, L0753: 1, L0755: 1, L0759: 1, L0592: 1, L0595: 1, H0543: 1, UNKWN: 1 and H0352: 1.	H0672: 1 and S3014: 1.		
HVVBK73	1012646	473	2 - 745	2648		H0036: 1, H0644: 1, H0672: 1 and L0603: 1.	7q34-qter	

HCOMW35	1012652	474	3 - 527	2649	Asp-49 to Asp-59, Asp-110 to Ile-115, Trp-137 to Ser-144.	L0766: 10, S0358: 4, H0318: 3, L0809: 3, S0360: 2, H0617: 2, H0264: 2, L0769: 2, L0775: 2, H0670: 2, H0462: 1, H0646: 1, L0761: 1, L0764: 1, L0771: 1, L0773: 1, L0805: 1, L0787: 1, S0374: 1, H0684: 1, L0779: 1 and L0758: 1.	22q13.31	250100, 250800, 250800
HVVBJ28	1012654	475	2 - 1117	2650	Arg-1 to Gly-12, Gly-19 to Trp-25, Asp-31 to Gly-39, Gly-43 to Glu-52, Ala-63 to His-71, Asn-141 to Phe-152, Leu-200 to Leu-208.	L0803: 4, L0745: 4, L0758: 4, H0672: 3, S0007: 2, H0090: 2, L0769: 2, L0804: 2, L0774: 2, L0809: 2, L0439: 2, L0749: 2, L0731: 2, L0599: 2, L0362: 2, S0418: 1, S0360: 1, S0046: 1, H0431: 1, H0486: 1, H0013: 1, L0021: 1, H0042: 1, S0010: 1, H0052: 1, H0046: 1, H0024: 1, H0266: 1, H0687: 1, S0022: 1, H0553: 1, L0770: 1, L0794: 1, L0783: 1, L0529: 1, H0435: 1, S0152: 1, H0521: 1,	4q27-q28	107250, 134820, 134820, 134820, 134830, 134850, 134850, 147680, 181600, 189800, 266300, 600919

HVVBR45	1012657	476	102 - 1742	2651	Arg-23 to Thr-28, Val-58 to Leu-67, Pro-115 to Thr-122.	L0747: 15, L0740: 14, L0779: 13, L0439: 9, L0731: 9, L0748: 8, L0776: 7, L0455: 6, L0769: 6, L0744: 6, L0756: 6, L0758: 6, S0328: 5, H0521: 5, L0752: 5, H0295: 4, L0717: 4, L0663: 4, H0672: 4, S0360: 3, S0046: 3, H0427: 3, H0599: 3, H0036: 3, H0687: 3, S0250: 3, S0022: 3, S0036: 3, L0770: 3, L0662: 3, L0774: 3, L0806: 3, L0783: 3, S0052: 3, H0144: 3, S0126: 3, H0660: 3, H0539: 3, L0742: 3, S0194: 3, H0556: 2, T0049: 2, H0662: 2, S0045: 2, H0619: 2, L0622: 2, H0013: 2, H0318: 2, S0049: 2, H0356: 2, H0553: 2, S0364: 2, S0366: 2, H0551: 2,	S0044: 1, H0555: 1, S0260: 1, L0366: 1, H0543: 1 and H0352: 1.	17q21.3	109270, 109270, 109270, 109270, 109270, 148065, 148080, 154275, 156490, 171190, 185800, 221820, 249000, 253250, 600119, 600119, 600525, 601844

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					S0260: 1, H0595: 1, L0591: 1, L0601: 1, L0366: 1, H0665: 1, H0667: 1, S0458: 1, S0446: 1 and H0352: 1.			
HVVAF41	1012665	477	59 - 550	2652	Pro-58 to Ser-64.	L0740: 15, L0748: 14, L0752: 10, H0494: 9, L0745: 9, H0013: 7, L0774: 7, L0754: 7, S0358: 6, S0444: 6, L0771: 6, S0374: 6, L0471: 5, H0032: 5, L0646: 5, L0655: 5, H0580: 4, H0574: 4, H0014: 4, H0373: 4, S0003: 4, H0529: 4, L0770: 4, L0766: 4, L0659: 4, L0665: 4, H0624: 3, S0376: 3, S0360: 3, S0408: 3, H0592: 3, H0039: 3, H0090: 3, T0042: 3, L0773: 3, L0662: 3, L0775: 3, L0663: 3, L0581: 3, H0423: 3, H0156: 2, H0599: 2, H0575: 2, H0590: 2, H0318: 2, H0581: 2, H0457: 2, H0123: 2, H0356: 2, H0553: 2,	11q23		107680, 107680, 107680, 107680, 107680, 107720, 133780, 147791, 159555, 168000, 186740, 186830, 188025, 203750, 261640, 600048, 601382, 602574, 602574

		H0591: 2, H0264: 2, S0438: 2, S0150: 2, S0144: 2, S0002: 2, S0426: 2, L0803: 2, L0657: 2, L0666: 2, L0664: 2, H0547: 2, S0126: 2, H0659: 2, H0648: 2, H0672: 2, H0710: 2, H0518: 2, S0152: 2, H0521: 2, L0439: 2, L0746: 2, L0750: 2, L0756: 2, L0731: 2, L0758: 2, S0434: 2, H0136: 2, L0600: 2, H0170: 1, H0171: 1, T0002: 1, S0134: 1, S0218: 1, H0650: 1, H0657: 1, H0341: 1, S0212: 1, S0282: 1, S0029: 1, H0125: 1, S0442: 1, S0354: 1, S0410: 1, H0619: 1, S6022: 1, H0391: 1, H0586: 1, H0497: 1, H0643: 1, H0486: 1, T0039: 1, T0040: 1, H0427: 1, H0098: 1, T0082: 1, H0706: 1, H0052: 1, H0596: 1, T0103: 1,				

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HVVAS32	1012668	478	105 - 2138	2653		H0542: 1, H0543: 1, S0424: 1, S0452: 1 and S0458: 1.	3q13	146200, 190300, 258900, 600882
						L0439: 7, S0136: 5, L0438: 4, L0749: 4, L0777: 4, L0752: 4, S0010: 3, H0672: 3, S0116: 2, L0717: 2, H0013: 2, H0057: 2, H0068: 2, H0551: 2, S0002: 2, L0763: 2, L0662: 2, L0794: 2, L0766: 2, L0803: 2, L0805: 2, L0776: 2, L0547: 2, L0789: 2, L0666: 2, L0665: 2, H0670: 2, H0521: 2, H0555: 2, L0748: 2, L0751: 2, L0747: 2, L0731: 2, L0758: 2, L0759: 2, L0599: 2, H0170: 1, T0002: 1, S0040: 1, S0212: 1, S0358: 1, S0045: 1, S0046: 1, H0619: 1, H0393: 1, H0392: 1, H0409: 1, H0485: 1, H0486: 1, H0244: 1, H0427: 1, L0021: 1, S0346: 1, H0196: 1,		

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HVVAQ70	1012678	479	131 - 982	2654	Leu-59 to Cys-66, Gln-74 to Leu-82, Asn-107 to Arg-121, Thr-160 to Ser-166, Lys-198 to Ile-203.	L0747: 13, L0731: 10, H0144: 8, L0809: 6, L0604: 6, L0769: 5, L0666: 5, L0663: 5, L0740: 5, L0759: 5,	8p11.2	

600617		L0471: 4, L0659: 4, L0752: 4, L0755: 4, L0592: 4, L0763: 3, L0764: 3, L0756: 3, S0026: 3, H0657: 2, H0013: 2, H0052: 2, H0687: 2, H0039: 2, L0455: 2, L0772: 2, L0766: 2, L0775: 2, L0805: 2, L0665: 2, S0126: 2, H0659: 2, H0521: 2, L0750: 2, L0779: 2, L0588: 2, L0605: 2, L0593: 2, L0362: 2, H0170: 1, H0171: 1, L0448: 1, H0686: 1, S0114: 1, S0134: 1, H0583: 1, S0212: 1, H0663: 1, S0420: 1, S0358: 1, H0580: 1, S0007: 1, S0046: 1, H0393: 1, L0717: 1, H0411: 1, H0261: 1, S0222: 1, H0632: 1, L0623: 1, T0039: 1, H0069: 1, H0427: 1, H0156: 1, H0597: 1, H0546: 1, H0373: 1, S0051: 1, T0010: 1, S0214: 1,				

					H0031: 1, H0090: 1, H0038: 1, H0063: 1, H0087: 1, H0551: 1, H0413: 1, S0038: 1, T0042: 1, H0494: 1, H0560: 1, H0142: 1, L0520: 1, L0637: 1, L0800: 1, L0773: 1, L0521: 1, L0662: 1, L0768: 1, L0794: 1, L0803: 1, L0804: 1, L0774: 1, L0806: 1, L0776: 1, L0655: 1, L0657: 1, L0512: 1, L0558: 1, L0636: 1, L0635: 1, H0520: 1, H0519: 1, H0684: 1, H0660: 1, H0666: 1, H0672: 1, S0330: 1, H0522: 1, H0576: 1, S3014: 1, L0742: 1, L0758: 1, H0444: 1, L0594: 1, H0667: 1, H0136: 1, H0543: 1 and H0506: 1.		
HVVAQ22	1012684	480	43 - 573	2655	His-1 to Asn-13, Ser-31 to Ser-42, Glu-47 to Val-55, Glu-65 to Val-70, Ile-95 to Asp-100,	L0731: 25, H0696: 17, L0754: 13, S0192: 13, L0809: 12, L0750: 12, L0757: 10, L0519: 9, L0605: 8, L0748: 7,	3cen-q21	

					Lys-107 to Phe-118, Asp-121 to Asn-127, Cys-136 to Lys-142, Met-165 to Glu-177.	H0411: 6, L0517: 6, H0672: 6, L0747: 6, H0369: 5, L0663: 5, S0330: 5, L0758: 5, S0358: 4, H0674: 4, L0764: 4, L0776: 4, L0783: 4, L0740: 4, S0360: 3, H0645: 3, H0550: 3, H0616: 3, L0662: 3, L0775: 3, H0144: 3, H0684: 3, L0777: 3, L0590: 3, L0599: 3, S0026: 3, S0444: 2, H0489: 2, T0039: 2, H0575: 2, H0597: 2, H0545: 2, H0015: 2, H0031: 2, H0111: 2, H0032: 2, H0169: 2, H0038: 2, T0069: 2, S0440: 2, L0772: 2, L0363: 2, L0768: 2, L0804: 2, L0782: 2, L0384: 2, L0565: 2, S0126: 2, S0328: 2, S0013: 2, H0345: 2, L0743: 2, L0749: 2, L0756: 2, L0759: 2, S0260: 2, H0506: 2, H0624: 1, H0171: 1, S0342: 1,

		H0664: 1, H0662: 1, S0408: 1, H0339: 1, S0300: 1, L0717: 1, H0600: 1, H0592: 1, H0587: 1, H0486: 1, H0013: 1, T0082: 1, S0346: 1, S0474: 1, H0251: 1, H0085: 1, H0596: 1, H0231: 1, H0544: 1, H0123: 1, T0003: 1, H0014: 1, L0163: 1, H0375: 1, H0687: 1, S0214: 1, H0328: 1, H0553: 1, H0644: 1, H0163: 1, H0090: 1, H0551: 1, H0264: 1, L0386: 1, L0533: 1, L0774: 1, L0376: 1, L0784: 1, L0378: 1, L0653: 1, L0654: 1, L0559: 1, L0659: 1, L0518: 1, L0530: 1, L0788: 1, L0791: 1, L0666: 1, L0665: 1, H0693: 1, H0658: 1, H0670: 1, S0378: 1, S0380: 1, S0044: 1, S0190: 1, S0174: 1, S0168: 1, L0751: 1, L0779: 1,				

HTAES83	1012693	481	200 - 2128	2656	Pro-55 to Asp-61, Gln-66 to Leu-72.	L0780: 1, S0031: 1 and S0412: 1.	H0457: 7, H0521: 7, H0150: 5, H0585: 4, H0255: 3, H0546: 3, H0617: 3, S0002: 3, L0659: 3, H0522: 3, S0434: 3, H0650: 2, H0254: 2, S0442: 2, S0376: 2, H0250: 2, S0003: 2, H0039: 2, H0553: 2, L0771: 2, L0662: 2, L0766: 2, H0689: 2, H0682: 2, L0751: 2, H0657: 1, S0116: 1, H0402: 1, S0418: 1, S0358: 1, S0360: 1, S0132: 1, S6026: 1, L0717: 1, S0278: 1, H0549: 1, H0610: 1, H0257: 1, H0559: 1, H0069: 1, H0581: 1, H0544: 1, H0271: 1, H0687: 1, H0286: 1, S0314: 1, H0688: 1, T0023: 1, H0606: 1, H0163: 1, H0063: 1, H0264: 1, S0464: 1, S0440: 1, H0647: 1, S0344: 1,	11q13.4-q13.5	133780, 266150, 276903, 276903, 276903

				H0695: 1, L0770: 1, L0638: 1, L0761: 1, L0667: 1, L0642: 1, L0643: 1, L0764: 1, L0651: 1, L0654: 1, L0783: 1, L0788: 1, L0789: 1, L0665: 1, S0052: 1, H0144: 1, H0703: 1, H0547: 1, H0593: 1, H0690: 1, H0658: 1, H0672: 1, S0378: 1, S0406: 1, H0555: 1, H0436: 1, S0027: 1, L0758: 1, H0707: 1, S0011: 1, H0542: 1 and H0423: 1.	11q13	102200, 106100, 131100, 131100, 131100, 133780, 147050, 153700, 161015, 164009, 168461, 168461, 168461, 180721,
HOCMN67	1012700	482	1 - 1182	2657	H0457: 9, H0695: 8, H0542: 7, H0521: 4, H0436: 4, H0581: 3, H0052: 3, H0135: 3, H0494: 3, H0650: 2, H0656: 2, S0356: 2, H0059: 2, H0641: 2, H0660: 2, L0741: 2, H0543: 2, H0265: 1, H0583: 1, H0255: 1, H0458: 1, S0360: 1, H0580: 1, S0278: 1, H0438: 1, H0492: 1, H0036: 1, H0590: 1,		

						H0618: 1, H0318: 1, H0544: 1, H0046: 1, H0123: 1, H0081: 1, T0010: 1, H0083: 1, H0271: 1, H0553: 1, H0163: 1, S0002: 1, S0052: 1, H0702: 1, H0703: 1, S0374: 1, H0520: 1, H0547: 1, H0690: 1, H0672: 1, H0539: 1, S0380: 1, S0406: 1, H0576: 1, H0445: 1, S0434: 1, L0601: 1, L0366: 1, H0422: 1 and H0506: 1.		180840, 191181, 193235, 209901, 232600, 259700, 259770, 600045, 600319, 600528, 601884
HAPOW35	1012711	483	92 - 619	2658	Ile-32 to Phe-42.	S0418: 2, S0328: 2, H0521: 2, H0733: 1, S0132: 1, H0575: 1, H0024: 1, H0135: 1, H0038: 1, S0038: 1, S0406: 1, L0439: 1 and H0543: 1.		
HOVJM48	1013085	484	2 - 454	2659		H0688: 2, L0766: 2, H0494: 1, L0652: 1, L0731: 1 and L0759: 1.		
HBJHY84	1013213	485	1524 - 208	2660	Gln-1 to Asp-24, Phe-40 to Gln-46.	L0766: 12, L0758: 8, S0422: 7, L0794: 6, H0622: 5, H0666: 5, L0754: 5, L0592: 5, H0040: 4, L0663: 4,		

		H0520: 4, L0666: 3, L0664: 3, L0665: 3, H0547: 3, L0756: 3, L0777: 3, L0731: 3, L0759: 3, S0434: 3, H0423: 3, H0624: 2, H0583: 2, S0116: 2, H0318: 2, H0581: 2, H0428: 2, L0598: 2, L0655: 2, H0690: 2, H0518: 2, H0170: 1, H0686: 1, S0134: 1, H0657: 1, H0656: 1, H0483: 1, S0376: 1, S0360: 1, S0408: 1, H0580: 1, H0329: 1, H0486: 1, H0575: 1, H0596: 1, H0046: 1, H0267: 1, H0063: 1, H0022: 1, H0625: 1, S0440: 1, S0472: 1, H0529: 1, L0761: 1, L0646: 1, L0662: 1, L0768: 1, L0364: 1, L0649: 1, L0803: 1, L0650: 1, L0774: 1, L0651: 1, L0784: 1, L0805: 1, L0607: 1, L0659: 1, L0787: 1, L0792: 1, H0519: 1,				

						H0682: 1, H0659: 1, H0658: 1, H0648: 1, S0380: 1, H0521: 1, H0555: 1, H0576: 1, S0392: 1, L0745: 1, L0749: 1, L0779: 1, H0444: 1, L0608: 1, L0362: 1, H0542: 1, L0465: 1, S0424: 1 and S0462: 1.		
HODEY05	1013215	486	525 - 701	2661	Val-10 to Ser-18, Pro-30 to Glu-36, Glu-47 to Gly-54.	H0428: 2, S0114: 1, H0656: 1, H0263: 1, H0615: 1, H0684: 1 and L0749: 1.			
HFIAS44	1013288	487	112 - 1629	2662	Arg-31 to Leu-43, Gly-63 to Trp-78, Thr-84 to Pro-89, Asp-120 to Gly-141, Glu-155 to Val-177, Leu-204 to Ser-214, Pro-230 to Lys-236, Lys-300 to Lys-307, Arg-329 to Ile-340, Pro-343 to Ala-368, Glu-375 to Pro-434, Leu-441 to Lys-446, Lys-464 to Glu-495.		14		
HHAUD68	1013349	488	212 - 538	2663	Gly-1 to Pro-6, Pro-21 to Ser-44, Pro-51 to Lys-78,	L0740: 4, H0591: 3, H0583: 2, H0013: 2, H0575: 2, H0266: 2,	6p21.3	106300, 108800, 120290,	

					Asp-80 to Ser-95, Leu-97 to Glu-103.	H0264: 2, L0805: 2, H0144: 2, S0330: 2, L0439: 2, H0445: 2, H0170: 1, H0556: 1, S0040: 1, S0218: 1, H0656: 1, H0125: 1, S0418: 1, S0376: 1, H0587: 1, H0497: 1, T0039: 1, H0069: 1, H0635: 1, H0599: 1, H0590: 1, H0318: 1, H0052: 1, H0596: 1, H0050: 1, S0003: 1, H0622: 1, H0090: 1, H0038: 1, H0634: 1, H0616: 1, H0551: 1, H0488: 1, S0016: 1, H0561: 1, S0002: 1, L0654: 1, L0518: 1, S0374: 1, S0126: 1, H0659: 1, H0660: 1, H0672: 1, H0651: 1, H0539: 1, H0521: 1, H0555: 1, L0750: 1, L0756: 1, L0757: 1, L0596: 1, L0590: 1, L0592: 1, S0026: 1, H0217: 1 and H0542: 1.		120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475
HEEAA89	1013436	489	1 - 675	2664	Trp-4 to Ser-11, Asn-17 to Arg-23.	L0748: 6, S0422: 4, H0658: 4, L0717: 3,	15q13	103581, 146150,

H0059: 3, L0769: 3, L0764: 3, H0352: 3, S0410: 2, H0632: 2, H0599: 2, H0046: 2, H0038: 2, H0264: 2, H0646: 2, S0002: 2, H0529: 2, L0766: 2, L0653: 2, L0659: 2, L0439: 2, L0601: 2, S0134: 1, H0583: 1, L0785: 1, S0116: 1, S0212: 1, H0255: 1, S0418: 1, S0358: 1, S0444: 1, H0675: 1, H0728: 1, H0619: 1, H0549: 1, H0392: 1, H0331: 1, T0109: 1, H0013: 1, H0635: 1, H0618: 1, S0010: 1, S0474: 1, H0052: 1, L0157: 1, H0050: 1, H0051: 1, H0375: 1, H0039: 1, H0553: 1, H0644: 1, L0456: 1, S0036: 1, H0625: 1, H0633: 1, L0637: 1, L0773: 1, L0768: 1, L0794: 1, L0522: 1, L0509: 1, L0661: 1, L0526: 1, L0809: 1,						218000, 227220, 601623, 601800, 601889, 602117

						L0663: 1, L0664: 1, L0665: 1, S0374: 1, L0438: 1, H0547: 1, H0648: 1, S0152: 1, S3014: 1, L0745: 1, L0747: 1, L0749: 1, L0779: 1, L0777: 1, L0597: 1, L0608: 1, H0543: 1 and S0458: 1.		
HNTAK22	1013524	490	2 - 3175	2665	Lys-1 to Lys-21.	H0519: 2, S0126: 2, H0341: 1, H0125: 1, L0562: 1, S0049: 1, H0123: 1, H0687: 1, H0292: 1, H0284: 1, S0312: 1, S0250: 1, H0622: 1, S0466: 1, L0649: 1, S0037: 1 and H0677: 1.	7	
HOVBX78	1013687	491	185 - 646	2666		AR096: 62, AR104: 41, AR089: 24, AR060: 24, AR061: 20, AR033: 16, AR053: 11, AR055: 11, AR039: 6 H0644: 5, L0439: 4, L0438: 3, S0278: 2, L0483: 2, H0581: 1, H0046: 1, H0355: 1, H0266: 1, H0038: 1, H0670: 1, H0521: 1, S0027: 1, L0740: 1 and		

						S0260: 1.		
HVVAW74	1013740	492	1066 - 575	2667	Ala-16 to His-30, Leu-106 to Gly-112, Asp-129 to Pro-137, Thr-144 to Leu-150.	L0526: 11, L0622: 8, H0670: 8, H0087: 7, S0360: 5, H0594: 5, H0188: 5, H0412: 5, S0206: 5, H0218: 4, S0418: 4, H0318: 4, H0024: 4, H0617: 4, L0770: 4, L0783: 4, S0328: 4, S0027: 4, H0265: 3, H0663: 3, T0048: 3, H0597: 3, H0123: 3, H0673: 3, S0366: 3, H0135: 3, H0616: 3, S0002: 3, L0775: 3, L0776: 3, L0518: 3, L0663: 3, H0144: 3, S0374: 3, S0126: 3, S0380: 3, S3014: 3, H0352: 3, H0624: 2, H0556: 2, H0219: 2, S0114: 2, H0657: 2, H0341: 2, S0110: 2, H0661: 2, H0305: 2, H0351: 2, H0492: 2, T0039: 2, H0052: 2, H0546: 2, H0178: 2, H0083: 2, H0688: 2, H0068: 2, H0038: 2, H0040: 2,	19pter-q12	

		H0509: 2, S0142: 2, S0426: 2, L0769: 2, L0521: 2, L0768: 2, H0689: 2, L0750: 2, H0445: 2, H0170: 1, H0686: 1, H0344: 1, H0295: 1, H0294: 1, S0134: 1, S0218: 1, H0650: 1, L0760: 1, S0116: 1, S0001: 1, H0483: 1, H0255: 1, H0662: 1, H0402: 1, S0358: 1, S0376: 1, H0675: 1, H0580: 1, S0046: 1, S0132: 1, S0278: 1, H0549: 1, H0441: 1, H0370: 1, H0455: 1, H0333: 1, H0643: 1, L0623: 1, T0060: 1, H0250: 1, T0082: 1, S0010: 1, H0505: 1, H0421: 1, H0327: 1, H0545: 1, H0150: 1, H0086: 1, H0012: 1, H0099: 1, H0109: 1, H0290: 1, T0023: 1, H0031: 1, H0181: 1, H0606: 1, H0166: 1, H0674: 1, H0124: 1, H0163: 1,		

						H0063: 1, H0551: 1, H0413: 1, H0102: 1, H0560: 1, S0372: 1, H0130: 1, S0144: 1, S0344: 1, S0422: 1, L0598: 1, L0507: 1, L0639: 1, L0648: 1, L0662: 1, L0767: 1, L0524: 1, L0805: 1, L0659: 1, L0542: 1, L0809: 1, L0530: 1, L0789: 1, H0691: 1, H0520: 1, H0519: 1, H0682: 1, H0684: 1, H0659: 1, H0658: 1, H0648: 1, H0672: 1, S0378: 1, S0152: 1, S0174: 1, H0576: 1, L0612: 1, H0540: 1, L0748: 1, L0740: 1, L0752: 1, L0758: 1, S0436: 1, L0485: 1, L0599: 1, L0608: 1, L0595: 1, L0362: 1, L0366: 1, S0106: 1, H0543: 1, S0446: 1, L0600: 1 and H0008: 1.		
HSPSF84	1013853	493	645 - 205	2668	Ser-4 to Arg-9, Ala-97 to Asp-104.	S0358: 6, H0024: 3, H0696: 3, L0581: 3, H0123: 2, L0776: 2,		

HPAMV95	1014003	494	3 - 713	2669	Lys-70 to Tyr-79, Lys-97 to Asp-102, Ser-154 to Ser-160, Asn-162 to Cys-169, Lys-212 to Ser-217, Ala-225 to Glu-230.	L0783: 2, H0658: 2, H0670: 2, H0648: 2, H0657: 1, S0116: 1, S0001: 1, H0661: 1, H0663: 1, H0450: 1, S6022: 1, H0438: 1, H0013: 1, S0280: 1, T0082: 1, H0421: 1, H0428: 1, T0067: 1, H0477: 1, S0038: 1, H0494: 1, L0762: 1, L0371: 1, L0800: 1, L0644: 1, L0773: 1, L0648: 1, L0662: 1, L0775: 1, L0375: 1, L0378: 1, L0806: 1, L0657: 1, L0666: 1, L0664: 1, H0682: 1, H0683: 1, S0378: 1, L0748: 1, L0751: 1, L0747: 1, L0753: 1, L0608: 1 and H0543: 1.	L0603: 8, L0754: 6, L0757: 4, L0758: 4, H0619: 3, H0622: 3, S0354: 2, S0360: 2, H0351: 2, H0586: 2, H0544: 2, N0006: 2, S0250: 2, H0030: 2, H0644: 2, H0617: 2,	17q25	114290, 138033, 162100, 170500, 170500, 170500, 180860, 264470

HOVBX22	1014041	495	223 - 312	2670	Ile-3 to Ser-11, Arg-24 to Glu-30.	H0428: 3			
HPDRB63	1014204	496	2 - 571	2671		H0123: 2, L0764: 2, H0032: 2, S0144: 2, L0803: 2, L0565: 2, L0438: 2, L0439: 2, S0418: 1, S0358: 1, S0278: 1, H0392: 1, H0592: 1, H0587: 1, L0021: 1, H0052: 1, H0546: 1, T0010: 1, H0271: 1, H0687: 1, S0214: 1, T0006: 1, H0031: 1, H0553: 1, L0142: 1, H0606: 1, H0087: 1, S0142: 1, S0208: 1, S0426: 1, L0761: 1, L0772: 1, L0800: 1, L0648: 1, L0662: 1, L0774: 1, L0653: 1, L0776: 1, L0782: 1, L0664: 1, H0519: 1, H0689: 1, H0690: 1, H0682: 1, H0658: 1, H0672: 1, H0555: 1, L0749: 1, L0756: 1, L0779: 1, L0755: 1, L0591: 1, S0026: 1, S0192: 1 and S0196: 1.		

						L0794: 2, L0803: 2, S0356: 1, H0318: 1, H0551: 1, L0662: 1, L0804: 1, H0658: 1, H0539: 1, L0786: 1, H0543: 1 and H0423: 1.		
HNHGJ66	1014252	497	2201 - 2467	2672	Lys-1 to Ser-8, Asn-32 to Asn-41, Gln-48 to Glu-53, Arg-73 to Ser-89.	AR061: 5, AR055: 3, AR096: 3, AR089: 2, AR033: 2, AR060: 2, AR104: 2, AR053: 1 S0038: 1 and S0053: 1.		
HDPPN96	1014432	498	395 - 2434	2673	Met-8 to Lys-13, Met-46 to Lys-52, Leu-89 to Lys-95, Ala-100 to Val-109, Pro-131 to Ser-160, Arg-172 to Thr-178.	H0264: 1 and H0522: 1.	1q22	104770, 107670, 110700, 145001, 146790, 159440, 159440, 159440, 186780, 191030, 191315, 600923, 601412, 601652, 602491
HPCTH41	1014485	499	165 - 890	2674	Ala-15 to Tyr-24, His-32 to Lys-48, Ala-60 to Gly-73, Ser-82 to Phe-88,	L0731: 10, L0758: 9, L0592: 8, L0770: 7, L0439: 7, L0754: 7, L0766: 5, L0764: 4,	11q25	602782

					Phe-105 to Phe-111, Phe-124 to Thr-138, Glu-211 to Val-217, Val-219 to Gln-224.	L0662: 4, L0659: 4, L0745: 4, L0655: 3, L0666: 3, L0663: 3, S0052: 3, L0748: 3, L0747: 3, L0750: 3, H0170: 2, S0360: 2, S0046: 2, H0013: 2, L0771: 2, L0768: 2, L0794: 2, L0803: 2, L0805: 2, L0664: 2, H0144: 2, L0565: 2, H0658: 2, H0710: 2, L0740: 2, L0749: 2, L0757: 2, L0608: 2, H0556: 1, H0686: 1, H0294: 1, S0114: 1, S0282: 1, S0029: 1, H0306: 1, L0005: 1, S0356: 1, S0300: 1, H0351: 1, H0369: 1, S0222: 1, H0587: 1, T0060: 1, H0250: 1, H0635: 1, H0156: 1, S0010: 1, H0052: 1, H0263: 1, H0596: 1, L0738: 1, H0545: 1, H0103: 1, S0051: 1, S0003: 1, S0214: 1, H0328: 1, L0143: 1, H0616: 1, H0412: 1,	

					L0564: 1, S0440: 1, UNKWN: 1, L0598: 1, H0529: 1, L0763: 1, L0371: 1, L0769: 1, L0638: 1, L0761: 1, L0646: 1, L0773: 1, L0648: 1, L0521: 1, L0649: 1, L0389: 1, L0806: 1, L0776: 1, L0657: 1, L0656: 1, L0783: 1, L0382: 1, L0529: 1, L0791: 1, S0374: 1, L0438: 1, H0547: 1, H0659: 1, H0648: 1, S0378: 1, H0522: 1, H0704: 1, S0406: 1, H0436: 1, L0742: 1, L0744: 1, L0756: 1, L0786: 1, L0752: 1, H0444: 1, L0589: 1, L0593: 1, L0362: 1, H0542: 1, S0446: 1 and H0352: 1.	7p15	138079, 138079, 139191, 142959, 153880, 180104, 600994,
HPCTY73	1014646	500	2 - 2299	2675	Cys-5 to Gly-10, Ala-22 to Pro-31, Lys-107 to Pro-114, Ala-149 to Arg-157, Ile-294 to Leu-299, Ser-356 to Pro-363, Pro-384 to Phe-392,	L0591: 18, S0027: 14, H0124: 12, L0596: 11, H0040: 10, S3014: 10, L0608: 10, H0519: 8, L0757: 8, H0556: 7, S0132: 7, S0126: 7, S0192: 7, S0358: 6,		

			Ala-474 to Gly-481, Ala-489 to Tyr-494, Pro-512 to Lys-517, Arg-623 to Thr-630, Lys-673 to Ser-678, Thr-703 to His-709, Arg-714 to Arg-720, Gly-755 to Glu-766.	H0543: 6, S0040: 5, S0003: 5, S0022: 5, S0214: 5, S0144: 5, S0037: 5, L0747: 5, L0777: 5, L0362: 5, S0026: 5, T0039: 4, H0318: 4, H0266: 4, H0560: 4, L0590: 4, L0599: 4, L0594: 4, S0011: 4, H0265: 3, H0657: 3, S0116: 3, H0663: 3, S0360: 3, S0045: 3, H0497: 3, H0559: 3, S0010: 3, H0052: 3, L0483: 3, H0090: 3, H0494: 3, L0766: 3, L0659: 3, L0666: 3, H0435: 3, L0602: 3, S3012: 3, L0740: 3, L0750: 3, L0731: 3, L0759: 3, H0542: 3, S0212: 2, H0431: 2, H0024: 2, H0014: 2, H0083: 2, H0428: 2, H0628: 2, H0617: 2, H0634: 2, H0551: 2, L0065: 2, H0509: 2, S0150: 2, S0210: 2, H0529: 2, L0768: 2,	601649

		L0775: 2, L0656: 2, L0663: 2, H0520: 2, H0659: 2, H0658: 2, H0670: 2, S0152: 2, H0521: 2, S0206: 2, L0751: 2, L0756: 2, L0597: 2, L0589: 2, L0485: 2, L0604: 2, L0595: 2, L0601: 2, L0603: 2, H0686: 1, H0583: 1, H0656: 1, L0785: 1, S0298: 1, H0402: 1, H0459: 1, S0418: 1, S0376: 1, H0580: 1, S0046: 1, H0393: 1, S0278: 1, H0437: 1, H0441: 1, H0370: 1, H0587: 1, H0486: 1, H0013: 1, H0427: 1, H0156: 1, H0575: 1, H0274: 1, T0048: 1, H0581: 1, H0421: 1, S0049: 1, H0251: 1, L0738: 1, H0123: 1, L0471: 1, H0051: 1, S0388: 1, S6028: 1, H0622: 1, T0023: 1, T0006: 1, H0644: 1, H0674: 1, L0455: 1, H0598: 1,				

		H0135: 1, H0616: 1, H0063: 1, T0067: 1, H0264: 1, H0268: 1, H0269: 1, H0056: 1, S0038: 1, T0042: 1, H0625: 1, H0561: 1, S0382: 1, S0464: 1, H0633: 1, S0472: 1, H0649: 1, S0142: 1, S0422: 1, L0598: 1, L0369: 1, L0769: 1, L0772: 1, L0374: 1, L0764: 1, L0771: 1, L0662: 1, L0363: 1, L0767: 1, L0388: 1, L0375: 1, L0653: 1, L0776: 1, L0661: 1, L0542: 1, L0526: 1, L0518: 1, L0519: 1, L0788: 1, S0428: 1, H0144: 1, H0547: 1, H0690: 1, H0660: 1, H0478: 1, H0627: 1, H0631: 1, S0028: 1, S0032: 1, L0743: 1, L0749: 1, L0752: 1, L0758: 1, S0031: 1, H0445: 1, L0592: 1, S0194: 1, H0423: 1, H0422: 1, S0424: 1 and				

HCOPQ33	1014730	501	3 - 380	2676	Ser-3 to Gln-34, Pro-43 to Ser-48, Pro-51 to Tyr-69, Asn-87 to Pro-92, Pro-107 to Val-119.	H0008: 1.	S0360: 8, S0356: 6, L0769: 6, L0598: 4, L0666: 4, L0750: 4, L0779: 4, L0758: 4, H0013: 3, L0803: 3, L0517: 3, L0809: 3, S0222: 2, H0592: 2, L0471: 2, H0169: 2, L0761: 2, L0764: 2, L0771: 2, L0776: 2, L0783: 2, L0664: 2, H0144: 2, H0670: 2, S0380: 2, L0748: 2, L0747: 2, L0777: 2, S0026: 2, H0624: 1, H0171: 1, S0040: 1, S6024: 1, L0002: 1, H0663: 1, L0005: 1, S6026: 1, H0351: 1, H0455: 1, H0600: 1, T0040: 1, H0244: 1, S0010: 1, H0052: 1, L0738: 1, S0316: 1, H0328: 1, H0615: 1, H0388: 1, H0135: 1, T0067: 1, H0059: 1, H0560: 1, H0647: 1, L0763: 1, L0646: 1, L0773: 1, L0662: 1,		

						L0794: 1, L0805: 1, L0653: 1, L0659: 1, L0790: 1, H0682: 1, H0684: 1, H0672: 1, S0378: 1, S0152: 1, H0478: 1, S3012: 1, S0028: 1, L0749: 1, L0757: 1, S0196: 1, H0008: 1, H0293: 1 and H0352: 1.		
HOEBR36	1014754	502	396 - 1061	2677		T0004: 2, L0372: 1, L0521: 1, L0806: 1, S0126: 1, H0435: 1 and L0731: 1.		
HLWDZ66	1014849	503	3 - 695	2678	Asp-24 to Val-36, Lys-38 to Glu-49, Pro-80 to Ser-90, Thr-131 to Gly-138.	AR096: 5, AR033: 4, AR089: 3, AR053: 3, AR052: 3, AR060: 3, AR039: 2, AR104: 1, AR055: 1, AR061: 1 L0803: 6, L0759: 6, L0666: 4, L0805: 3, L0756: 3, L0362: 3, S0442: 2, L0646: 2, L0794: 2, L0766: 2, L0659: 2, H0144: 2, L0438: 2, H0520: 2, L0779: 2, L0596: 2, H0423: 2, L0600: 2, H0170: 1, S0114: 1, H0650: 1, S0358: 1,		

HOEER36	1014869	504	3051 - 2260	2679	Ala-32 to Ala-38, Pro-55 to Glu-72, Ala-83 to Glu-109, Glu-114 to Leu-121, Thr-135 to Lys-143, Leu-149 to Lys-166, Val-173 to Ser-178, Lys-185 to Gln-195, Pro-208 to Thr-214, Gln-243 to Arg-253, Lys-259 to Lys-264.	L0439: 13, L0766: 11, L0747: 11, L0740: 10, L0752: 9, L0776: 8, L0809: 7, L0777: 7, L0769: 6, L0803: 6, L0748: 6, L0759: 6, L0764: 5, H0659: 5, L0755: 5, L0761: 4, L0806: 4, L0438: 4, L0749: 4, L0779: 4, L0758: 4, H0083: 3, L0796: 3, L0662: 3, S0444: 1, S0360: 1, H0329: 1, S0222: 1, H0497: 1, H0036: 1, S0474: 1, H0051: 1, H0687: 1, S0214: 1, H0615: 1, H0428: 1, H0622: 1, H0553: 1, H0598: 1, H0040: 1, H0634: 1, L0060: 1, T0041: 1, S0422: 1, L0773: 1, L0774: 1, L0657: 1, L0809: 1, L0789: 1, L0664: 1, S0126: 1, H0689: 1, H0435: 1, H0670: 1, L0748: 1, L0439: 1, L0731: 1, S0031: 1 and S0434: 1.	6p23	125264, 600511, 601556

		L0783: 3, L0663: 3, H0658: 3, L0743: 3, L0744: 3, L0751: 3, L0750: 3, L0731: 3, S0026: 3, S0134: 2, H0657: 2, S0010: 2, H0544: 2, S0051: 2, H0266: 2, S0003: 2, H0622: 2, L0763: 2, L0768: 2, L0804: 2, L0774: 2, L0775: 2, L0655: 2, L0545: 2, L0665: 2, H0547: 2, H0689: 2, S0380: 2, S3012: 2, S3014: 2, L0756: 2, H0595: 2, L0588: 2, L0605: 2, L0362: 2, L0601: 2, S0424: 2, H0624: 1, H0171: 1, H0556: 1, S0212: 1, H0664: 1, L0005: 1, S0354: 1, S0360: 1, S0410: 1, H0580: 1, S0046: 1, H0393: 1, H0411: 1, H0549: 1, H0370: 1, H0559: 1, H0427: 1, H0318: 1, S0474: 1, H0085: 1, T0115: 1, H0327: 1, H0545: 1,				

					H0046: 1, N0006: 1, H0123: 1, L0471: 1, S0388: 1, S0214: 1, H0252: 1, L0483: 1, H0553: 1, S0036: 1, H0591: 1, H0038: 1, H0040: 1, H0616: 1, T0067: 1, H0413: 1, S0386: 1, T0042: 1, H0560: 1, L0598: 1, H0529: 1, L0520: 1, L0762: 1, L0772: 1, L0646: 1, L0771: 1, L0794: 1, L0375: 1, L0805: 1, L0657: 1, L0367: 1, L0787: 1, L0666: 1, H0144: 1, S0126: 1, H0648: 1, H0672: 1, S0328: 1, H0521: 1, S0037: 1, L0754: 1, L0757: 1, H0444: 1, L0591: 1, H0667: 1, H0216: 1 and H0543: 1.		
HE8OX75	1015010	505	18 - 170	2680	Ser-1 to Tyr-6.	L0803: 4, L0745: 3, L0804: 2, L0805: 2, H0672: 2, L0742: 2, L0752: 2, L0759: 2, H0583: 1, H0369: 1, H0550: 1, H0013: 1,	

					H0156: 1, H0085: 1, L0351: 1, H0509: 1, L0769: 1, L0776: 1, L0657: 1, L0809: 1, L0666: 1, H0684: 1, L0439: 1, L0779: 1, L0777: 1, L0753: 1, L0757: 1 and H0444: 1.		
HVASI06	1015024	506	67 - 1365	2681	L0809: 8, L0666: 8, S0436: 8, H0038: 6, S0330: 6, S0442: 5, S0440: 5, L0662: 5, L0794: 5, L0663: 5, H0040: 4, L0776: 4, L0664: 4, L0740: 4, L0754: 4, L0601: 4, S0358: 3, S0376: 3, S0444: 3, L0157: 3, L0763: 3, L0770: 3, L0803: 3, L0653: 3, L0659: 3, L0665: 3, H0658: 3, H0672: 3, H0341: 2, H0125: 2, S0408: 2, H0587: 2, H0360: 2, H0318: 2, H0263: 2, H0231: 2, H0328: 2, H0615: 2, T0023: 2, H0561: 2, L0372: 2, L0800: 2, L0768: 2, L0766: 2,		

		L0522: 2, L0806: 2, S0374: 2, H0547: 2, H0519: 2, S0126: 2, H0659: 2, L0745: 2, L0750: 2, L0752: 2, S0434: 2, H0506: 2, H0265: 1, H0556: 1, S0040: 1, H0717: 1, H0294: 1, H0583: 1, H0657: 1, L0785: 1, H0669: 1, H0671: 1, H0661: 1, H0663: 1, H0664: 1, S0420: 1, L0005: 1, S0356: 1, S0132: 1, H0619: 1, H0351: 1, S0222: 1, S0220: 1, H0431: 1, T0039: 1, H0618: 1, T0110: 1, L0738: 1, H0570: 1, H0569: 1, L0471: 1, H0292: 1, H0039: 1, H0034: 1, H0031: 1, H0553: 1, L0055: 1, H0166: 1, H0169: 1, H0674: 1, H0068: 1, H0598: 1, S0036: 1, H0163: 1, H0591: 1, H0359: 1, S0450: 1, H0647: 1, H0646: 1, S0344: 1,				

HDPXP07	1015059	507	3 - 242	2682	Lys-1 to Trp-11, Asn-13 to Lys-30,	L0638: 1, L0641: 1, L0643: 1, L0764: 1, L0363: 1, L0649: 1, L0774: 1, L0775: 1, L0376: 1, L0805: 1, L0527: 1, L0657: 1, L0512: 1, L0783: 1, L0382: 1, L0787: 1, L0532: 1, S0216: 1, L0438: 1, H0520: 1, H0593: 1, H0690: 1, H0682: 1, H0683: 1, H0435: 1, H0670: 1, H0660: 1, H0666: 1, H0648: 1, S0380: 1, H0518: 1, H0696: 1, S0044: 1, S0146: 1, S0406: 1, S3012: 1, S0027: 1, S0028: 1, L0746: 1, L0749: 1, L0779: 1, L0777: 1, L0731: 1, L0758: 1, S0031: 1, L0599: 1, L0608: 1, L0595: 1, H0668: 1, H0665: 1, S0276: 1, H0423: 1, S0424: 1, UNKWN: 1, L0600: 1 and H0008: 1.	L0766: 7, L0769: 4, L0747: 4, L0758: 4,	

					Leu-33 to Thr-53.	H0251: 3, L0805: 3, S0007: 2, S0414: 2, H0644: 2, H0672: 2, S0026: 2, H0686: 1, H0713: 1, H0663: 1, S0376: 1, S0360: 1, S0046: 1, L0717: 1, H0574: 1, H0486: 1, H0427: 1, H0596: 1, L0040: 1, L0738: 1, H0046: 1, H0571: 1, L0471: 1, S0051: 1, H0510: 1, S0003: 1, S0214: 1, H0674: 1, H0708: 1, H0038: 1, H0412: 1, H0646: 1, S0002: 1, L0773: 1, L0662: 1, L0767: 1, L0794: 1, L0804: 1, L0806: 1, L0776: 1, L0606: 1, L0783: 1, L0792: 1, L0665: 1, H0660: 1, H0648: 1, H0521: 1, H0555: 1, L0743: 1, L0756: 1, L0777: 1, L0755: 1, L0759: 1, S0031: 1, L0362: 1, H0542: 1 and H0543: 1.		
HE2KH02	1015093	508	1 - 615	2683		L0777: 11, L0438: 7,		

		L0759: 6, L0748: 5, H0052: 4, L0779: 4, H0013: 3, L0598: 3, L0770: 3, H0624: 2, H0717: 2, S0442: 2, S0354: 2, L0149: 2, S0046: 2, S0010: 2, H0050: 2, H0328: 2, UNKWN: 2, L0803: 2, L0776: 2, L0659: 2, H0670: 2, H0660: 2, L0439: 2, L0747: 2, L0749: 2, L0731: 2, L0594: 2, H0542: 2, H0170: 1, H0171: 1, L0785: 1, H0384: 1, S0358: 1, H0549: 1, S0222: 1, H0632: 1, S0414: 1, S0474: 1, S0049: 1, H0194: 1, H0327: 1, H0046: 1, H0051: 1, S0051: 1, T0010: 1, H0083: 1, S0003: 1, H0644: 1, H0628: 1, H0316: 1, S0036: 1, H0040: 1, H0413: 1, H0100: 1, S0150: 1, L0769: 1, L0373: 1, L0765: 1, L0662: 1, L0794: 1,			

						L0649: 1, L0804: 1, L0805: 1, L0789: 1, L0666: 1, L0663: 1, L0665: 1, H0144: 1, S0374: 1, H0520: 1, H0658: 1, H0666: 1, H0672: 1, S0380: 1, S0406: 1, L0754: 1, L0756: 1, L0758: 1, S0031: 1 and L0589: 1.		
HSPSI60	1015133	509	2230 - 1901	2684	Gln-20 to Glu-27, Ser-43 to Ser-49, Ser-89 to Ala-95.	L0766: 5, L0438: 3, L0777: 3, H0090: 2, L0439: 2, L0731: 2, L0759: 2, S0114: 1, H0318: 1, L0471: 1, H0687: 1, H0509: 1, H0695: 1, L0803: 1, L0774: 1, L0775: 1, L0523: 1, L0806: 1, L0776: 1, L0809: 1, L0666: 1, H0690: 1, H0683: 1, H0659: 1, H0670: 1, L0749: 1 and L0779: 1.		
HOCOC26	1015143	510	97 - 693	2685	Pro-1 to Ser-9, Glu-48 to Gly-54, Gly-66 to Leu-71, Pro-78 to Glu-84, Ala-108 to Gln-116, Ile-167 to Asp-172,	L0748: 11, L0750: 5, L0740: 4, L0756: 4, L0758: 4, L0769: 3, L0766: 3, L0776: 3, L0779: 3, H0135: 2, L0763: 2, L0770: 2,		

HHEDC05	1015204	511	1035 - 7	2686	Pro-43 to Cys-48, Thr-75 to Gln-82.	H0695: 124, H0542: 48, H0730: 32, H0688: 27, H0735: 25, H0684: 24, H0728: 23, H0687:	Thr-179 to His-185.	L0796: 2, L0768: 2, L0774: 2, L0783: 2, L0809: 2, L0438: 2, H0519: 2, H0672: 2, L0751: 2, L0747: 2, L0777: 2, L0755: 2, L0757: 2, H0341: 1, S0356: 1, S0442: 1, S0444: 1, S0360: 1, S0046: 1, H0431: 1, T0040: 1, H0599: 1, H0327: 1, H0046: 1, H0024: 1, H0014: 1, H0510: 1, H0688: 1, H0708: 1, H0413: 1, H0131: 1, S0150: 1, S0426: 1, L0373: 1, L0646: 1, L0771: 1, L0773: 1, L0650: 1, L0666: 1, S0374: 1, H0684: 1, H0660: 1, S0380: 1, S0406: 1, L0749: 1, L0752: 1, L0753: 1, L0588: 1, L0599: 1, H0543: 1, H0423: 1 and H0422: 1.

HODES86	1015304	512	89 - 421	2687		L0753: 3, H0615: 1		

HOPJU57	1015324	513	943 - 1164	2688	Gly-1 to Tyr-6, Lys-10 to Gly-19, Ser-46 to Lys-59.	and H0683: 1. H0585: 21, L0742: 12, L0747: 9, S0358: 8, H0052: 8, S0126: 8, H0141: 7, H0620: 7, L0748: 7, H0009: 6, H0624: 4, S0408: 4, H0427: 4, H0081: 4, S0051: 4, H0660: 4, L0750: 4, S0444: 3, H0393: 3, H0599: 3, H0618: 3, L0471: 3, H0083: 3, H0617: 3, H0708: 3, H0413: 3, H0494: 3, H0672: 3, L0740: 3, L0751: 3, L0755: 3, H0171: 2, H0294: 2, S0046: 2, H0455: 2, H0333: 2, H0156: 2, H0002: 2, H0097: 2, H0706: 2, S0049: 2, H0024: 2, H0373: 2, H0356: 2, S0364: 2, S0366: 2, H0135: 2, H0412: 2, S0440: 2, L0640: 2, L0766: 2, L0532: 2, L0754: 2, L0757: 2, S0031: 2, L0604: 2, H0506: 2, H0161: 1,		

		H0717: 1, H0716: 1, H0583: 1, H0657: 1, S0282: 1, H0664: 1, H0402: 1, H0638: 1, S0354: 1, S0376: 1, S0360: 1, H0208: 1, S0476: 1, H0411: 1, S6022: 1, S6016: 1, H0392: 1, H0438: 1, H0600: 1, H0586: 1, H0331: 1, H0574: 1, T0109: 1, H0013: 1, H0253: 1, H0390: 1, H0581: 1, H0173: 1, H0194: 1, H0204: 1, H0231: 1, H0327: 1, H0530: 1, H0544: 1, H0123: 1, H0051: 1, H0099: 1, S0340: 1, H0428: 1, H0424: 1, H0213: 1, L0142: 1, H0628: 1, H0032: 1, H0634: 1, S0038: 1, H0100: 1, T0041: 1, T0042: 1, S0438: 1, H0641: 1, H0652: 1, S0144: 1, L0769: 1, L0638: 1, L0771: 1, L0662: 1, L0768: 1, L0653: 1, L0776: 1,				

					L0807: 1, H0593: 1, H0682: 1, H0684: 1, H0658: 1, H0670: 1, S0330: 1, H0522: 1, H0576: 1, L0612: 1, S3014: 1, S0027: 1, L0744: 1, L0745: 1, L0731: 1, H0445: 1 and S0434: 1.		
HVCAC71	1015343	514	2 - 1204	2689	Pro-13 to Pro-23.	4q21-q25	104500, 125490, 137600, 147790, 173910, 189800, 217030, 248510, 252500, 252500, 600919, 601542
					H0494: 6, H0046: 5, S0028: 5, H0519: 4, H0713: 3, H0547: 3, H0458: 2, H0574: 2, H0013: 2, H0551: 2, T0042: 2, L0438: 2, H0521: 2, S3014: 2, H0423: 2, H0506: 2, H0170: 1, H0171: 1, H0716: 1, S0134: 1, H0650: 1, H0656: 1, H0341: 1, S0212: 1, S0282: 1, H0449: 1, H0638: 1, S0418: 1, S0354: 1, S0358: 1, S0045: 1, S0132: 1, S0476: 1, S0280: 1, H0599: 1, H0575: 1, T0082: 1, H0036: 1, S0010: 1, H0581: 1, H0052: 1, H0251: 1,		

					H0596: 1, H0530: 1, H0544: 1, H0081: 1, H0050: 1, H0014: 1, H0373: 1, S0003: 1, S0022: 1, L0194: 1, H0213: 1, H0644: 1, S0364: 1, S0366: 1, H0040: 1, H0634: 1, T0067: 1, H0268: 1, H0623: 1, L0475: 1, H0561: 1, S0150: 1, H0646: 1, L0766: 1, H0702: 1, S0374: 1, H0520: 1, H0683: 1, H0435: 1, H0660: 1, H0666: 1, H0672: 1, S0380: 1, H0696: 1, S0027: 1, S0032: 1, L0740: 1, L0747: 1, S0434: 1, S0436: 1, L0597: 1, H0667: 1, S0194: 1, H0542: 1, H0543: 1, S0424: 1 and H0293: 1.		
HSXCQ55	1015360	515	6 - 1076	2690	Val-9 to Gly-18, Pro-21 to Gly-27, Gly-81 to Trp-91, Lys-120 to Gly-126, Ile-166 to Pro-172, Val-185 to Ala-192,	L0749: 14, L0439: 8, L0438: 6, L0748: 4, L0747: 4, L0779: 4, L0769: 3, S0442: 2, S0038: 2, L0764: 2, L0662: 2, L0766: 2,		

					Asp-207 to Ser-212, Ser-241 to Lys-248, Trp-250 to Tyr-258, Gln-287 to Asn-292.	L0659: 2, L0809: 2, L0666: 2, H0144: 2, H0658: 2, L0754: 2, L0750: 2, L0756: 2, L0777: 2, L0780: 2, H0624: 1, H0170: 1, H0171: 1, H0556: 1, S0402: 1, S0282: 1, H0645: 1, L0717: 1, H0586: 1, L0586: 1, H0427: 1, S0010: 1, H0046: 1, H0457: 1, H0050: 1, L0471: 1, S0051: 1, T0010: 1, S6028: 1, H0688: 1, H0031: 1, H0169: 1, S0036: 1, H0135: 1, H0494: 1, H0560: 1, S0438: 1, H0207: 1, H0633: 1, H0647: 1, S0142: 1, S0422: 1, L0803: 1, L0804: 1, L0776: 1, L0655: 1, S0148: 1, H0547: 1, S0126: 1, H0683: 1, H0670: 1, H0672: 1, H0539: 1, L0744: 1, L0757: 1, L0758: 1, L0759: 1, L0593: 1, H0543: 1 and H0423: 1.		

HLWDB78	1015430	516	57 - 629	2691	Lys-90 to Arg-96.	L0766: 4, L0748: 4, S0037: 2, L0749: 2, S0360: 1, H0571: 1, S0003: 1, H0553: 1, H0551: 1, S0142: 1, S0002: 1, L0794: 1, L0804: 1, H0519: 1, H0659: 1, H0660: 1, L0754: 1 and H0136: 1.		
HPCQU04	1015563	517	216 - 1232	2692		H0585: 26, H0141: 12, H0623: 6, L0766: 6, H0013: 5, H0318: 5, H0556: 4, H0657: 4, H0457: 4, L0471: 4, L0776: 4, H0659: 4, S0360: 3, H0599: 3, S0010: 3, S0003: 3, H0634: 3, T0067: 3, H0538: 3, L0598: 3, L0770: 3, L0764: 3, H0144: 3, L0751: 3, L0747: 3, L0757: 3, L0758: 3, H0445: 3, H0542: 3, T0002: 2, S0418: 2, S0376: 2, S0132: 2, S0222: 2, H0497: 2, H0559: 2, H0620: 2, H0083: 2, H0428: 2, H0124: 2, H0068: 2, H0090: 2,	4q21	104500, 125490, 147790, 173910, 252500, 252500

		H0412: 2, H0494: 2, H0561: 2, L0769: 2, L0372: 2, L0775: 2, L0375: 2, L0655: 2, L0517: 2, L0526: 2, H0520: 2, H0519: 2, S0126: 2, S0330: 2, H0521: 2, S0206: 2, L0743: 2, L0745: 2, L0752: 2, L0593: 2, L0595: 2, S0026: 2, H0543: 2, H0423: 2, H0265: 1, H0686: 1, S0342: 1, T0049: 1, S0134: 1, H0650: 1, S0116: 1, H0341: 1, H0661: 1, S0420: 1, S0356: 1, L0717: 1, S0278: 1, H0549: 1, H0550: 1, H0441: 1, H0442: 1, S0005: 1, L0623: 1, H0486: 1, T0114: 1, S0280: 1, H0575: 1, H0581: 1, H0052: 1, H0046: 1, H0123: 1, H0050: 1, H0012: 1, H0015: 1, H0239: 1, H0375: 1, S0022: 1, H0615: 1, H0030: 1, H0644: 1,				

					H0628: 1, H0617: 1, H0674: 1, H0316: 1, S0036: 1, H0591: 1, H0040: 1, H0380: 1, H0100: 1, S0372: 1, H0509: 1, H0132: 1, S0142: 1, S0210: 1, S0002: 1, H0529: 1, L0369: 1, L0520: 1, L0763: 1, L0761: 1, L0667: 1, L0386: 1, L0657: 1, L0789: 1, L0666: 1, H0697: 1, T0068: 1, H0547: 1, H0593: 1, H0670: 1, H0539: 1, H0555: 1, H0436: 1, S3014: 1, S0028: 1, L0754: 1, L0750: 1, L0756: 1, L0755: 1, L0588: 1, L0599: 1, L0362: 1, L0361: 1, L0601: 1, S0011: 1, H0665: 1, S0424: 1 and L0600: 1.		
HDPAT52	1015574	518	1387 - 335	2693	Pro-11 to Gly-18, Glu-24 to Cys-32, Glu-34 to Met-47, Ala-55 to Glu-60, Ile-75 to Gln-81, Ser-132 to Thr-139,	L0599: 2, H0253: 1, H0581: 1, H0263: 1, H0200: 1, H0040: 1, H0623: 1, H0280: 1, H0593: 1, H0521: 1 and H0555: 1.		

					Gln-167 to Gln-180, Leu-183 to Phe-195, Gln-211 to Gln-223, Gln-232 to Leu-244, Gln-253 to Ala-269, Pro-274 to Leu-292, Thr-302 to Thr-330.			
HAOSL81	1015620	519	28 - 747	2694	Asp-1 to Lys-6, Gln-29 to Gly-35, Pro-39 to Arg-49, Pro-51 to Trp-58, Ser-78 to Gly-83, Ser-179 to His-194.	H0124: 11, L0751: 5, L0747: 4, H0295: 3, H0620: 3, L0794: 3, L0741: 3, L0758: 3, H0686: 2, H0549: 2, H0617: 2, L0768: 2, L0766: 2, L0774: 2, L0745: 2, L0731: 2, H0656: 1, S0420: 1, S0444: 1, S0360: 1, S0408: 1, S0222: 1, H0486: 1, H0013: 1, L0021: 1, H0052: 1, H0327: 1, H0009: 1, T0010: 1, H0033: 1, H0604: 1, H0031: 1, H0068: 1, H0038: 1, H0100: 1, H0509: 1, L0769: 1, L0761: 1, L0804: 1, L0775: 1, L0636: 1, L0809: 1, L0792: 1, L4501: 1, L0665: 1, L0438: 1,		

HMWIU46	1015814	520	1 - 1152	2695	Gly-4 to Gln-11, Val-87 to Asn-97, Gly-168 to Leu-178, Asp-194 to Phe-200, Phe-205 to Arg-210, Gln-292 to Gly-306, Gly-328 to Ser-342, Gly-349 to Asp-358, His-365 to Asp-379.	H0684: 1, H0660: 1, H0539: 1, H0555: 1, L0742: 1, L0786: 1, H0668: 1 and S0424: 1.		20q11.21-q11.23	
HSXCQ19	1015994	521	3 - 1100	2696	Gly-5 to Ala-25, Pro-28 to Leu-43, Pro-45 to Glu-57, Pro-64 to Trp-70, Gly-76 to Ala-90, Gly-99 to Gly-106.	L0809: 7, L0758: 7, S0007: 4, L0662: 4, L0794: 4, L0665: 4, L0439: 4, L0754: 4, H0333: 3, L0769: 3, L0761: 3, L0803: 3, H0395: 2, S0222: 2, H0124: 2, S0036: 2, L0535: 2, L0666: 2, H0658: 2, L0751: 2, L0747: 2, L0485: 2, H0716: 1, H0295: 1, H0402: 1, S0418: 1, S0442: 1, H0619: 1, H0586: 1, L0623: 1, H0486: 1, S0280: 1, L0021: 1, H0618: 1,			

					H0318: 1, H0052: 1, H0251: 1, H0123: 1, H0050: 1, H0012: 1, S0051: 1, H0179: 1, H0615: 1, T0006: 1, H0673: 1, H0135: 1, H0087: 1, H0264: 1, H0100: 1, L0763: 1, L5565: 1, L0667: 1, L0772: 1, L0644: 1, L0768: 1, L0775: 1, L0805: 1, L0655: 1, L0659: 1, L0526: 1, L0663: 1, S0052: 1, H0682: 1, H0660: 1, L0602: 1, L0743: 1, L0750: 1, L0756: 1, L0779: 1, L0777: 1, L0592: 1, H0136: 1 and S0424: 1.	1q21.1	104770, 107670, 110700, 145001, 146790, 191315, 601412, 601652, 601863, 602491
HNOAG06	1016272	522	316 - 546	2697	Pro-8 to Asn-22, Thr-31 to Ser-36.	L0754: 3, L0662: 2, L0766: 2, L0805: 2, S0052: 2, L0747: 2, L0749: 2, L0731: 2, L0758: 2, L0759: 2, L0591: 2, L0599: 2, L0595: 2, S0045: 1, L0021: 1, H0053: 1, H0318: 1, H0150: 1, H0617: 1, H0040: 1,		

					H0359: 1, L0770: 1, L0521: 1, L0768: 1, L0803: 1, L0804: 1, L0659: 1, L0809: 1, L0789: 1, H0648: 1, H0651: 1, L0779: 1, L0780: 1 and L0752: 1.		
HE2KN09	1016351	523	3 - 656	2698	AR052: 27, AR033: 27, AR039: 25, AR053: 24, AR055: 19, AR089: 19, AR096: 19, AR104: 17, AR060: 14, AR061: 12 L0776: 4, L0783: 4, H0624: 3, H0559: 3, H0620: 3, H0615: 3, H0100: 3, L0769: 3, L0766: 3, L0755: 3, H0619: 2, H0081: 2, H0604: 2, L0775: 2, L0375: 2, L0659: 2, L0809: 2, H0670: 2, H0672: 2, H0539: 2, L0777: 2, L0759: 2, T0002: 1, H0295: 1, T0049: 1, H0657: 1, H0381: 1, H0661: 1, H0662: 1, S0442: 1, S0376: 1, S0360: 1, S0408: 1, H0550: 1,		

HISDH58	1016740	524	1678 - 248	2699	Asp-55 to Cys-73, Pro-75 to Tyr-85.	S0222: 1, H0486: 1, H0156: 1, H0599: 1, H0052: 1, H0597: 1, H0545: 1, H0565: 1, H0563: 1, H0012: 1, H0373: 1, H0266: 1, H0292: 1, H0284: 1, T0006: 1, H0181: 1, H0617: 1, H0264: 1, H0413: 1, H0059: 1, H0494: 1, H0509: 1, H0529: 1, L0763: 1, L0770: 1, L0796: 1, L0639: 1, L0646: 1, L0643: 1, L0645: 1, L0774: 1, L0806: 1, L0519: 1, L0665: 1, H0144: 1, L0438: 1, L0352: 1, H0520: 1, H0547: 1, S0126: 1, H0658: 1, S0378: 1, S0380: 1, H0521: 1, H0696: 1, H0576: 1, L0439: 1, L0747: 1, L0750: 1, L0752: 1, L0753: 1, L0731: 1 and H0543: 1.	H0620: 1, H0130: 1 and H0539: 1.	
HSPSB62	1016768	525	148 - 990	2700	Leu-36 to Glu-41,	S0276: 7, H0543: 6,			

					Asp-48 to Asp-55, Ser-104 to Glu-199, Pro-202 to Trp-233, Gly-236 to Ala-247, Phe-256 to Ser-263, Glu-273 to Asp-281.	S0358: 3, H0046: 3, H0424: 3, L0748: 3, H0265: 2, H0556: 2, H0661: 2, S0420: 2, H0052: 2, H0135: 2, H0090: 2, H0433: 2, L0752: 2, L0758: 2, H0422: 2, H0657: 1, H0484: 1, H0483: 1, H0638: 1, S0360: 1, S0132: 1, H0645: 1, H0550: 1, H0391: 1, T0039: 1, H0250: 1, S0010: 1, H0009: 1, H0123: 1, H0081: 1, S0051: 1, H0428: 1, H0040: 1, S0038: 1, S0144: 1, H0547: 1, H0593: 1, H0683: 1, H0670: 1, H0518: 1, H0134: 1, S0037: 1, S3014: 1, S0027: 1, S0032: 1, L0744: 1, L0740: 1, L0746: 1, L0731: 1, H0445: 1, L0596: 1, S0011: 1 and H0542: 1.		
HE2FR37	1016939	526	109 - 729	2701	Gly-1 to Met-15, Met-60 to Gln-67, Val-76 to Gly-82,	AR060: 2, AR089: 2, AR055: 1, AR061: 1, AR096: 1, AR104: 0,		

				Leu-117 to Arg-123.	AR053: 0, AR033: 0, AR039: 0 H0328: 2, H0124: 2, L0766: 2, H0171: 1, L0005: 1, S0360: 1, H0329: 1, H0156: 1, H0615: 1, H0477: 1, S0440: 1, L0598: 1, H0547: 1, S0126: 1, S0168: 1 and H0595: 1.		
HBJHU33	1017051	527	1 - 618	2702	Met-34 to Gly-50, Asp-69 to Trp-90, Asp-99 to Lys-107, Val-164 to Thr-170.			
HCOQZ88	1017227	528	3 - 1196	2703	His-1 to Arg-12.	L0748: 38, L0747: 30, L0759: 7, S0360: 5, L0664: 5, L0779: 5, H0486: 4, S0010: 4, L0758: 4, S0222: 3, L0455: 3, S0386: 3, L0764: 3, L0771: 3, L0775: 3, L0438: 3, S0028: 3, L0749: 3, H0580: 2, H0208: 2, H0013: 2, S0280: 2, H0575: 2, H0251: 2, H0024: 2, S0214: 2, H0428: 2, H0622: 2, H0031: 2, H0644: 2, L0646: 2, L0800: 2,	6q23	107470, 107470, 107470, 121014, 142470, 156225, 164200, 164200, 207800, 601316, 601410, 601757, 602067

		L0773: 2, L0662: 2, L0794: 2, L0804: 2, H0521: 2, L0752: 2, S0026: 2, H0583: 1, H0459: 1, S0418: 1, S0356: 1, H0675: 1, S0045: 1, H0619: 1, H0441: 1, T0039: 1, T0109: 1, H0581: 1, H0263: 1, H0596: 1, H0232: 1, H0327: 1, L0471: 1, H0057: 1, H0375: 1, H0266: 1, S0003: 1, H0688: 1, H0553: 1, H0376: 1, H0163: 1, H0090: 1, H0591: 1, H0616: 1, S0370: 1, S0382: 1, H0529: 1, L0770: 1, L0769: 1, L0638: 1, L0761: 1, L0772: 1, L0642: 1, L0767: 1, L0768: 1, L0364: 1, L0766: 1, L0606: 1, L0659: 1, L0809: 1, L0663: 1, H0144: 1, L0565: 1, L0352: 1, S0126: 1, H0682: 1, H0659: 1, H0670: 1, H0672: 1, L0602: 1,			

						H0518: 1, S0146: 1, S3014: 1, L0439: 1, L0745: 1, L0750: 1, L0777: 1, L0755: 1, L0731: 1, H0595: 1, L0596: 1, H0543: 1 and H0352: 1.		
HNTSV21	1017374	529	673 - 1008	2704	Asn-41 to Lys-46, Pro-73 to Lys-92.	L0599: 2, H0265: 1, S0114: 1, S0116: 1, H0486: 1, H0031: 1, H0090: 1, H0616: 1, H0547: 1, H0670: 1, L0743: 1, L0744: 1, L0747: 1 and L0592: 1.	1	
HNORH33	1017461	530	255 - 2063	2705		S0358: 11, L0777: 9, H0046: 8, L0439: 6, L0759: 6, L0438: 5, L0662: 4, L0794: 4, L0766: 4, S0114: 3, L0803: 3, L0789: 3, H0144: 3, S0126: 3, L0748: 3, S0011: 3, S0196: 3, H0686: 2, H0250: 2, H0024: 2, H0031: 2, H0628: 2, H0056: 2, L0667: 2, L0805: 2, L0659: 2, L0809: 2, L0663: 2, L0665: 2, S0328: 2, H0521: 2, S3014: 2,		

HUFEF35	1017565	531	162 - 2159	2706		S0402: 1, S0212: 1, S0348: 1, S0356: 1, S0442: 1, S0360: 1, S0222: 1, H0431: 1, H0486: 1, H0599: 1, H0581: 1, L0471: 1, L0163: 1, H0201: 1, S0051: 1, H0375: 1, S0214: 1, H0553: 1, L0142: 1, L0143: 1, H0032: 1, L0455: 1, H0090: 1, H0591: 1, H0063: 1, H0551: 1, H0623: 1, T0041: 1, T0042: 1, H0561: 1, H0714: 1, H0509: 1, H0633: 1, L0637: 1, L0761: 1, L0800: 1, L0768: 1, L0650: 1, L0378: 1, L0655: 1, L0666: 1, H0691: 1, H0435: 1, H0658: 1, H0651: 1, L0744: 1, L0750: 1, L0757: 1, L0758: 1, L0591: 1, L0599: 1, L0362: 1, S0242: 1, H0542: 1, H0543: 1 and H0422: 1.	S0276: 34, S0360: 25, L0666: 25, L0665: 14,	12q24.2-q24.3	100650, 100650,

							142410, 142410, 142410, 160781, 181405
						S0194: 14, L0748: 13, L0662: 12, H0553: 9, L0663: 9, L0664: 8, H0547: 8, H0658: 8, H0506: 8, L0500: 7, L0659: 7, H0486: 6, L0526: 6, H0659: 6, H0672: 6, S0406: 6, S0434: 6, H0318: 5, H0428: 5, H0412: 5, L0653: 5, L0657: 5, L0517: 5, H0519: 5, H0170: 4, H0685: 4, H0657: 4, S0358: 4, H0083: 4, H0031: 4, H0551: 4, S0440: 4, L0770: 4, S0374: 4, S0328: 4, H0696: 4, H0445: 4, L0596: 4, L0608: 4, H0542: 4, H0624: 3, H0686: 3, S6024: 3, S0356: 3, S0354: 3, S0408: 3, H0581: 3, H0046: 3, H0510: 3, H0328: 3, H0644: 3, H0038: 3, T0067: 3, S0450: 3, L0598: 3, L0520: 3, L0646: 3, L0521: 3, L0768: 3, L0375: 3,

		L0655: 3, L0493: 3, S0126: 3, H0521: 3, L0439: 3, L0754: 3, L0757: 3, L0588: 3, H0543: 3, S0114: 2, H0663: 2, S0442: 2, H0580: 2, L0717: 2, S0222: 2, T0060: 2, L0040: 2, L0471: 2, H0266: 2, H0687: 2, H0165: 2, H0068: 2, H0413: 2, T0041: 2, H0560: 2, H0509: 2, S0210: 2, L0369: 2, L0638: 2, L0637: 2, L0364: 2, L0775: 2, L0776: 2, L0527: 2, L0656: 2, L0518: 2, L0519: 2, H0520: 2, H0435: 2, S0330: 2, H0539: 2, H0704: 2, H0436: 2, L0751: 2, L0747: 2, L0752: 2, L0589: 2, L0605: 2, L0599: 2, L0595: 2, L0362: 2, L0448: 1, S0342: 1, T0049: 1, S0134: 1, H0650: 1, L0760: 1, S0212: 1, H0661: 1, H0664: 1,					

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HJPCG39	1017694	532	1 - 132	2707	Ser-19 to Arg-24.	L0650: 1, L0774: 1, L0651: 1, L0654: 1, L0513: 1, L0558: 1, L0782: 1, L0783: 1, L0384: 1, L0383: 1, L0382: 1, L0528: 1, L0647: 1, L0792: 1, H0144: 1, S0296: 1, T0068: 1, S0148: 1, L0438: 1, L0352: 1, H0689: 1, H0690: 1, H0682: 1, H0684: 1, H0666: 1, H0651: 1, S0380: 1, L0602: 1, H0710: 1, H0522: 1, H0694: 1, S0404: 1, H0478: 1, H0631: 1, S0028: 1, L0742: 1, L0749: 1, L0750: 1, L0779: 1, L0755: 1, L0758: 1, L0759: 1, S0031: 1, H0444: 1, H0707: 1, L0591: 1, L0592: 1, H0668: 1, H0665: 1, S0192: 1, S0242: 1, H0423: 1, H0422: 1, S0424: 1, S0460: 1 and S0384: 1.	L0794: 3, L0752: 3, L0520: 2, L0803: 2,	

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HISBM03	1017772	533	748 - 924	2708	Pro-2 to Leu-8, Phe-12 to Arg-20, Thr-32 to Lys-38.	L0766: 25, L0439: 20, L0438: 16, L0758: 11, L0747: 9, L0731: 9, L0794: 8, L0805: 8, L0748: 8, L0752: 7, L0759: 7, H0038: 6, L0769: 6, L0809: 6, L0750: 6, L0777: 6, L0757: 6, L0592: 6, L0770: 5, L0803: 5, L0749: 5, L0593: 5, H0581: 4, L0774: 4, L0776: 4, H0435: 4, H0521: 4, L0740: 4, L0754: 4, H0305: 3, S0418: 3, H0013: 3, H0318: 3, S0003: 3, H0616: 3, H0412: 3, H0413: 3, S0422: 3, L0800: 3, L0771: 3,		

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HOFAA79	1017801	534	2 - 559	2709	Ala-15 to Asp-26, Phe-108 to Trp-113, Glu-167 to Tyr-175.	AR089: 17, AR039: 16, AR096: 16, AR053: 16, AR052: 13, AR033: 12, AR060: 11, AR055: 8, AR104: 7, AR061: 6 H0415: 1 and H0414: 1.	11	
HPRAJ96	1017825	535	587 - 429	2710		L0740: 21, L0748: 14, L0731: 10, L0747: 9, L0752: 9, L0757: 7, H0674: 6, L0750: 6, S0358: 5, L0768: 5, L0809: 5, H0648: 5, L0779: 5, H0318: 4, L0766: 4, L0776: 4,	1p36.1	116600, 120550, 120570, 120575, 130500, 133200, 171760, 171760,

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							L0588: 1, L0591: 1, L0593: 1, S0026: 1 and S0384: 1.		
HBXFX71	1018032	536	1 - 123	2711	Pro-1 to Ser-6, Pro-9 to Pro-16, Pro-34 to Leu-41.	H0549: 5, L0769: 5, L0157: 4, L0742: 3, S0010: 2, H0620: 2, S0051: 2, H0617: 2, H0483: 1, H0661: 1, S0420: 1, S0045: 1, H0411: 1, H0550: 1, H0370: 1, H0438: 1, H0434: 1, H0545: 1, H0615: 1, S0112: 1, H0494: 1, L0770: 1, L0364: 1, L0783: 1, L0809: 1, L0666: 1, H0547: 1, H0682: 1, H0672: 1, L0779: 1, L0758: 1 and L0592: 1.		
HMVDD81	1018080	537	14 - 745	2712	Arg-8 to Gly-17, Gly-29 to Pro-45, Arg-62 to Leu-84, Gln-87 to Leu-96, Glu-103 to Val-114, Gln-141 to Cys-153, Ile-162 to Glu-180, Arg-186 to Lys-211, Asn-219 to Asn-228.	H0694: 92, L0747: 14, L0766: 13, L0764: 7, S0126: 7, L0439: 7, L0758: 7, L0759: 7, H0657: 6, H0656: 6, S0358: 6, H0266: 6, L0763: 6, L0776: 6, L0655: 6, L0659: 6, L0666: 6, L0748: 6, L0777: 6, L0752: 6, H0445: 6, H0486: 5,		

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HVVDH50	1018226	538	2344 - 1004	2713	Pro-18 to Ser-40, Pro-81 to Pro-95, Pro-111 to Phe-118, Gly-127 to Ala-132, Pro-143 to Phe-151, Pro-164 to Pro-174, Pro-180 to Lys-187, Met-205 to Phe-211, Phe-228 to Pro-236, Pro-245 to Pro-255, Ala-263 to His-270, Gln-272 to Gln-280, Asn-296 to Ala-304, Gly-333 to Gly-344,	L0751: 17, L0731: 11, S0344: 9, S0126: 9, L0743: 9, L0595: 9, S0046: 8, S0002: 8, H0521: 8, L0744: 8, S0278: 7, S0037: 7, L0750: 7, S0420: 6, H0618: 6, H0024: 6, H0188: 6, H0622: 6, S3014: 6, L0439: 6, H0550: 5, H0620: 5, H0551: 5, H0623: 5, L0659: 5, H0255: 4, S0418: 4, H0052: 4,	7q32		180105, 190900, 222800, 246900

					Thr-353 to Ser-360, Gln-365 to Val-379, Pro-381 to Arg-390, Glu-418 to Gln-423, Leu-438 to Ser-445.	S0142: 4, S0426: 4, L0663: 4, H0435: 4, S0027: 4, L0742: 4, L0754: 4, L0758: 4, H0265: 3, H0556: 3, S0040: 3, S0212: 3, S0045: 3, H0599: 3, H0253: 3, T0048: 3, H0266: 3, H0271: 3, S0250: 3, H0494: 3, S0440: 3, H0641: 3, S0144: 3, L0646: 3, L0662: 3, L0775: 3, L0809: 3, L0749: 3, L0777: 3, L0752: 3, H0542: 3, T0002: 2, H0295: 2, H0662: 2, H0306: 2, S0356: 2, S0442: 2, S0360: 2, H0580: 2, H0393: 2, S0222: 2, H0592: 2, H0559: 2, T0039: 2, H0013: 2, H0250: 2, S0280: 2, H0575: 2, H0581: 2, H0597: 2, H0544: 2, H0545: 2, H0046: 2, H0179: 2, H0252: 2, H0039: 2, H0030: 2, H0628: 2, H0617: 2, H0124: 2,		

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HNNBT57	1018243	539	377 - 3	2714	Pro-9 to Ala-24, Thr-52 to Gly-61, Thr-64 to Ser-70.	H0677: 7			
HCONJ11	1018459	540	1937 - 1125	2715	His-11 to Ala-17, Pro-29 to Ser-35, Asn-59 to Asp-64, Lys-67 to Leu-72, Gln-101 to Asp-110, Pro-157 to Lys-176, Gln-181 to Lys-210, Gln-213 to Lys-228, Pro-253 to Asn-264.	H0581: 3, H0615: 3, L0766: 3, L0777: 3, H0657: 2, H0486: 2, H0013: 2, H0641: 2, L0803: 2, S0011: 2, H0543: 2, H0423: 2, H0556: 1, H0341: 1, S0420: 1, S0356: 1, H0580: 1, H0586: 1, H0575: 1, S0049: 1, H0263: 1, H0545: 1, H0150: 1, H0041: 1, H0009: 1, L0471: 1, H0014: 1, S0051: 1, S0003: 1, H0328: 1, H0622: 1, H0032: 1, H0674: 1, H0038: 1,	10q23	174900, 236730, 601493	

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HCQAW68	1018501	541	1652 - 1212	2716	Asn-19 to Ile-26, Val-44 to Lys-54, Arg-70 to Val-83, Arg-95 to Thr-100, Arg-136 to Arg-141.	L0748: 4, L0777: 4, L0756: 2, H0263: 1, H0046: 1, H0023: 1, H0188: 1, L0761: 1, L0662: 1, L0526: 1, L0790: 1, L0747: 1 and L0758: 1.			
HVVCY25	1018772	542	1170 - 355	2717	Ser-7 to Trp-12, Pro-28 to Gly-58, Lys-212 to Cys-218, Glu-229 to Gly-235.	H0547: 10, H0542: 10, H0266: 9, L0794: 7, S0358: 6, H0559: 6, L0803: 6, L0666: 6, L0601: 6, H0013: 5,	19p13.3-p13.2	108725, 120700, 133171, 136836, 143890,	

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HVVCF30	1018907	544	50 - 319	2719	Pro-13 to Ala-20, Pro-53 to Ser-61.			
HODBV21	1018943	545	1186 - 476	2720		H0328: 2		
HCHMD81	1019326	546	1 - 1005	2721	Ala-4 to Ala-11.	L0758: 9, L0770: 7, H0620: 6, L0731: 6, L0747: 5, L0777: 5, H0265: 4, L0771: 4, L0748: 4, L0759: 4, L0769: 3, L0662: 3, L0774: 3, L0526: 3, L0439: 3, L0751: 3, L0750: 3, S0358: 2, H0424: 2, S0144: 2, L0520: 2, L0764: 2, L0364: 2, L0776: 2, L0809: 2, L0664: 2, L0754: 2, S0436: 2, L0588: 2, L0601: 2, H0556: 1, H0685: 1, S0040: 1, S6024: 1, H0341: 1, H0484: 1, H0661: 1, H0306: 1,		

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HAZAR95	1019338	547	11 - 1192	2722	Arg-63 to Arg-77, Glu-186 to Trp-192, Ile-222 to Tyr-228, Lys-284 to Glu-293, Asn-324 to Ser-329, Pro-375 to Lys-388.	L0666: 13, L0665: 13, L0588: 12, L0601: 9, S0358: 8, L0664: 8, S0360: 7, L0471: 7, L0657: 7, L0659: 7, L0748: 7, H0415: 6, S0214: 6, L0520: 6, L0372: 6, L0803: 6, L0375: 6, L0655: 6, H0659: 6, L0608: 6, L0362: 6, L0361: 6, S0376: 5, L0663: 5, L0439: 5, T0049: 4, H0581: 4, L0646: 4, L0804: 4, L0809: 4, S0328: 4, L0747: 4, L0749: 4, L0755: 4, L0731: 4, L0591: 4, L0604: 4, L0595: 4, H0542: 4, H0662: 3, H0545: 3, H0687: 3, H0100: 3, H0509: 3, H0529: 3, L0763: 3, L0764: 3, L0662: 3, L0794: 3, S0330: 3, L0740: 3, H0445: 3, L0600: 3, H0265: 2, H0661: 2, S0418: 2, H0156: 2, H0318: 2, H0172: 2, H0620: 2,	12q23	124200, 147440, 160781, 235800, 600175

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		T0060: 1, H0427: 1, H0599: 1, H0004: 1, S0346: 1, H0196: 1, H0052: 1, H0263: 1, H0544: 1, T0003: 1, H0083: 1, H0629: 1, S6028: 1, H0188: 1, S0003: 1, H0428: 1, H0039: 1, H0030: 1, H0553: 1, H0165: 1, H0169: 1, S0036: 1, H0135: 1, H0551: 1, H0264: 1, H0412: 1, T0069: 1, L0475: 1, S0370: 1, L0065: 1, S0438: 1, H0647: 1, H0649: 1, S0422: 1, S0426: 1, L0762: 1, L0371: 1, L0770: 1, L0769: 1, L0638: 1, L0761: 1, L0641: 1, L0642: 1, L0773: 1, L0521: 1, L0387: 1, L0766: 1, L0649: 1, L0774: 1, L0807: 1, L0517: 1, L0540: 1, L0526: 1, L0384: 1, L0382: 1, L0530: 1, L0647: 1, L0787: 1, L0532: 1, S0374: 1,				

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HMWFS51	1019409	548	65 - 484	2723	L0776: 3, H0341: 2, L0005: 2, T0023: 2, L0766: 2, L0527: 2, L0659: 2, L0809: 2, L0665: 2, L0748: 2, L0740: 2, L0747: 2, L0731: 2, L0362: 2, S0114: 1, H0305: 1, S0376: 1, H0393: 1, H0574: 1, H0013: 1, H0263: 1, H0266: 1, H0688: 1, L0483: 1,		

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HE8SD82	1019585	549	1 - 570	2724	Asn-1 to Pro-7, Glu-33 to Ser-40, Pro-54 to Thr-63, Leu-82 to Arg-106, Gly-109 to Asn-119, Glu-145 to Val-150, Lys-161 to Gln-168, Arg-170 to Phe-175, Thr-177 to Tyr-184.	H0031: 4, S0007: 2, H0244: 2, S0010: 2, H0194: 2, H0553: 2, S0036: 2, H0040: 2, H0529: 2, L0005: 1, S0356: 1, H0676: 1, H0411: 1, S0222: 1, S6014: 1, H0587: 1, H0497: 1, H0013: 1, H0575: 1, H0327: 1, L0471: 1, H0024: 1, L0143: 1, H0038: 1, H0494: 1, H0538: 1, H0660: 1, H0539: 1, H0521: 1, H0555: 1 and H0136: 1.			
HSPSN08	1019608	550	77 - 1120	2725	Pro-25 to Glu-54, Ser-66 to Glu-71, Gly-86 to Trp-92, Arg-104 to Asn-109,	H0683: 11, H0617: 3, L0766: 2, H0686: 1, H0254: 1, H0255: 1, L0021: 1, H0123: 1,		

					Asn-133 to Asn-138, Thr-153 to Ser-160, Asn-269 to Glu-277, Leu-290 to Tyr-297.	H0012: 1, S0051: 1, H0083: 1, H0039: 1, T0006: 1, H0413: 1, L0794: 1, L0809: 1, L0748: 1 and S0026: 1.		
HVCAH24	1019749	551	97 - 468	2726	Arg-1 to Arg-8, Gly-30 to Gln-40, Phe-50 to Asp-58, Leu-97 to Ser-112.	H0156: 2, H0624: 1, H0171: 1, H0686: 1, H0656: 1, H0574: 1, H0486: 1, S0316: 1, H0622: 1, H0038: 1, S0150: 1, H0520: 1, H0547: 1, H0658: 1, H0666: 1, H0521: 1 and S0028: 1.		
HCEBF54	1019777	552	400 - 840	2727	Pro-89 to Leu-101.	AR104: 2, AR061: 1, AR089: 1, AR033: 0, AR060: 0, AR096: 0, AR053: 0, AR039: 0, AR055: 0, AR052: 0 L0794: 2, L0803: 2, L0655: 2, L0665: 2, H0684: 2, L0754: 2, L0747: 2, H0686: 1, L0470: 1, H0662: 1, H0125: 1, S0360: 1, L0021: 1, H0052: 1, H0085: 1, H0597: 1, H0009: 1, S0362: 1, H0644: 1, H0673: 1, L0060: 1, H0560: 1,		

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HPQAD21	1019869	553	176 - 271	2728	S0136: 115, L0803: 9, S0026: 9, L0731: 8, H0624: 6, S0418: 6, S0358: 6, L0805: 6, H0619: 5, L0666: 5, L0439: 5, L0754: 5, L0756: 5, H0170: 4, S0360: 4, H0553: 4, L0662: 4, H0547: 4, L0750: 4, L0779: 4, H0351: 3, H0486: 3, H0046: 3, H0050: 3, L0471: 3, H0266: 3, H0623: 3, L0770: 3, H0144: 3, H0520: 3, S0380: 3, S0040: 2, H0295: 2, H0661: 2, S0420: 2, S0376: 2, H0722: 2, H0369: 2,			

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HJPCF71	1019892	554	219 - 830	2729	Asp-41 to Gly-56.	L0439: 4, L0777: 4, S0214: 3, L0752: 3, H0686: 2, H0486: 2, L0775: 2, L0651: 2,		

					L0750: 2, S0114: 1, H0656: 1, S0212: 1, H0663: 1, H0586: 1, H0546: 1, H0024: 1, H0083: 1, H0510: 1, H0428: 1, H0038: 1, H0560: 1, H0646: 1, L0763: 1, L0773: 1, L0662: 1, L0774: 1, L0378: 1, L0661: 1, L0384: 1, L0789: 1, L0666: 1, L0438: 1, S0028: 1, L0747: 1, L0756: 1, L0758: 1, H0423: 1 and S0460: 1.		
HVCAE76	1019942	555	99 - 2111	2730	L0779: 7, L0439: 5, H0624: 4, L0766: 4, L0438: 4, H0657: 3, L0662: 3, L0657: 3, L0666: 3, S0360: 2, L0764: 2, L0655: 2, L0532: 2, L0664: 2, S0428: 2, H0670: 2, L0777: 2, L0755: 2, L0731: 2, H0423: 2, L0465: 2, H0170: 1, L0002: 1, H0583: 1, S0400: 1, H0589: 1, L0481: 1, S0354: 1, S0358: 1, S0408: 1,		

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HOCMH14	1020007	556	1 - 1485	2731	His-3 to Trp-8, Glu-16 to Gly-23, Tyr-47 to Gly-56,	H0457: 7, L0743: 5, L0439: 5, L0751: 5, L0752: 5, L0731: 4,		

				Ala-88 to Cys-93, Ala-108 to Ser-139, Ser-145 to Ser-151, Asp-154 to Ala-164, Pro-168 to Thr-189, Pro-196 to Ser-203, Pro-229 to Ala-235, Thr-255 to Glu-261, Pro-271 to Pro-276, Pro-289 to Asn-310, Pro-318 to Tyr-329, Arg-334 to Arg-345, Arg-347 to Thr-356, Lys-373 to Arg-391, Glu-396 to Pro-414.	H0618: 3, H0253: 3, H0545: 3, L0662: 3, H0689: 3, L0748: 3, L0777: 3, L0758: 3, L0785: 2, H0692: 2, H0662: 2, H0550: 2, S0049: 2, L0770: 2, L0764: 2, L0659: 2, H0670: 2, L0779: 2, L0757: 2, L0759: 2, S0434: 2, H0225: 1, S0218: 1, H0650: 1, H0656: 1, L0426: 1, S0212: 1, S0442: 1, H0489: 1, H0580: 1, S0046: 1, S0132: 1, S0476: 1, H0549: 1, H0587: 1, H0333: 1, H0559: 1, H0427: 1, L0021: 1, H0599: 1, H0274: 1, H0581: 1, H0421: 1, H0052: 1, H0231: 1, L0157: 1, H0566: 1, H0123: 1, T0010: 1, H0408: 1, H0355: 1, H0266: 1, H0271: 1, H0687: 1, H0163: 1, H0087: 1, H0494: 1, H0359: 1, S0344: 1, L0371: 1,	

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HPDRZ03	1020130	557	122 - 751	2732	Asp-7 to Ala-15, Pro-34 to Ile-60, Gln-110 to Asn-117.	L0777: 4, S0358: 3, H0486: 3, L0750: 3, L0779: 3, L0752: 3, S0412: 3, S0134: 2, H0013: 2, L0766: 2, L0803: 2, H0519: 2, H0658: 2, L0599: 2, L0604: 2, S0192: 2, T0002: 1, S0342: 1, S0212: 1, H0661: 1, H0619: 1, H0411: 1, H0632: 1, T0114: 1, H0575: 1, H0318: 1, T0110: 1, H0544: 1,	

					H0457: 1, H0328: 1, L0055: 1, H0169: 1, T0067: 1, S0422: 1, L0763: 1, L0773: 1, L0363: 1, L0804: 1, L0806: 1, L0663: 1, H0648: 1, S0152: 1, L0751: 1, L0756: 1, L0755: 1, L0731: 1, L0758: 1, L0593: 1, L0594: 1, H0665: 1, H0543: 1 and S0424: 1.		
HOCPO73	1020180	558	3745 - 2963	2733	L0777: 7, L0759: 5, L0638: 3, L0766: 3, L0804: 3, L0663: 3, L0439: 3, H0657: 2, L0055: 2, L0666: 2, H0660: 2, L0604: 2, L0615: 1, S0358: 1, L0471: 1, H0628: 1, H0038: 1, S0344: 1, H0529: 1, L0761: 1, L0630: 1, L0646: 1, L0764: 1, L0364: 1, L0803: 1, L0805: 1, L0655: 1, L0809: 1, L0790: 1, L0532: 1, H0689: 1, H0435: 1, H0658: 1, S0330: 1, H0521: 1, H0436: 1,		

						L0740: 1, L0749: 1, L0750: 1, L0757: 1, L0594: 1, L0595: 1 and S0026: 1.		
HNKDT10	1020832	559	2 - 535	2734		S0330: 109, S0328: 51, S0446: 12, L0659: 5, L0666: 4, L0779: 4, S0456: 4, L0717: 3, L0775: 3, H0593: 3, L0748: 3, L0439: 3, L0747: 3, L0749: 3, L0758: 3, L0021: 2, H0615: 2, L0662: 2, L0766: 2, L0803: 2, L0663: 2, L0665: 2, S0310: 2, H0658: 2, H0648: 2, S0406: 2, L0740: 2, L0731: 2, L0595: 2, H0624: 1, H0662: 1, S0376: 1, H0351: 1, H0411: 1, H0587: 1, L0022: 1, L0105: 1, H0688: 1, H0617: 1, L0455: 1, H0494: 1, S0352: 1, S0464: 1, S0440: 1, S0422: 1, L0772: 1, L0646: 1, L0771: 1, L0773: 1, L0649: 1, L5569: 1, L0499: 1,		

					L0375: 1, L0651: 1, L0784: 1, L0806: 1, L0509: 1, L0655: 1, L0657: 1, L0513: 1, L0809: 1, L0545: 1, L0790: 1, L0791: 1, L0792: 1, L0664: 1, H0144: 1, H0519: 1, S0126: 1, S0404: 1, H0555: 1, L0751: 1, L0777: 1, S0436: 1 and L0592: 1.			
HWHGO25	1020841	560	3 - 113	2735	Gly-7 to Leu-15, Pro-17 to His-29.	L0747: 5, L0805: 3, L0761: 2, L0803: 2, L0775: 2, H0658: 2, L0758: 2, S0298: 1, H0586: 1, H0597: 1, L0646: 1, L0776: 1, L0518: 1, L0519: 1, L0528: 1, L0529: 1, L0790: 1, L0666: 1, H0690: 1, H0521: 1, L0749: 1 and L0777: 1.		
HWMNE31	1020852	561	157 - 681	2736	Thr-15 to Trp-23, Ala-44 to Gln-51, Lys-62 to Arg-70, Asp-102 to Lys-114, Val-116 to Ala-148, Phe-151 to Glu-163.	L0803: 13, L0766: 10, L0731: 8, L0751: 6, L0601: 6, L0756: 5, L0764: 4, L0789: 4, S0136: 4, H0436: 4, L0777: 4, L0596: 4, H0556: 3, H0580: 3,		

		H0328: 3, H0615: 3, H0090: 3, L0775: 3, L0666: 3, L0747: 3, L0755: 3, L0758: 3, S0412: 3, H0341: 2, S0376: 2, H0393: 2, H0549: 2, H0431: 2, H0587: 2, H0013: 2, L0021: 2, H0597: 2, H0014: 2, H0644: 2, L0800: 2, L0773: 2, L0662: 2, L0784: 2, L0805: 2, L0438: 2, H0520: 2, H0648: 2, L0748: 2, L0439: 2, L0740: 2, L0604: 2, H0265: 1, H0685: 1, S0114: 1, H0657: 1, H0656: 1, H0661: 1, H0663: 1, H0402: 1, S0358: 1, S0444: 1, S0360: 1, S0045: 1, H0351: 1, L0394: 1, S0222: 1, H0333: 1, H0575: 1, H0318: 1, H0421: 1, H0052: 1, T0103: 1, H0570: 1, H0024: 1, H0083: 1, H0067: 1, H0188: 1, S0003: 1, S0214: 1,				

						H0622: 1, H0673: 1, L0456: 1, H0163: 1, H0591: 1, H0040: 1, H0551: 1, T0067: 1, H0412: 1, H0560: 1, H0647: 1, S0142: 1, S0208: 1, S0422: 1, H0695: 1, L0369: 1, L0520: 1, L0763: 1, L0770: 1, L0638: 1, L0771: 1, L0794: 1, L0774: 1, L0651: 1, L0378: 1, L0776: 1, L0657: 1, L0809: 1, L0532: 1, L0663: 1, L0664: 1, L0665: 1, H0144: 1, H0725: 1, H0659: 1, H0666: 1, H0518: 1, H0521: 1, S0013: 1, H0696: 1, S0406: 1, S3014: 1, S0027: 1, L0754: 1, L0749: 1, L0752: 1, L0757: 1, S0260: 1, L0592: 1, S0026: 1, S0276: 1, H0542: 1, H0423: 1, H0422: 1 and H0721: 1.		
HUSYJ75	1020878	562	1 - 420	2737		H0484: 35, L0751: 15, L0758: 12, H0483: 10,		

		L0743: 9, H0370: 8, S0442: 7, S0126: 7, S0436: 7, S0420: 6, L0766: 6, H0670: 6, H0672: 6, L0744: 6, L0779: 6, S0434: 6, H0661: 5, S0476: 5, H0617: 5, H0660: 5, S0027: 5, L0747: 5, L0592: 5, S0040: 4, H0716: 4, H0662: 4, S0140: 4, H0545: 4, H0150: 4, S0440: 4, H0641: 4, H0689: 4, H0682: 4, H0684: 4, S0380: 4, S0406: 4, S3014: 4, S0356: 3, H0729: 3, H0733: 3, S0007: 3, H0639: 3, H0123: 3, H0424: 3, S0366: 3, H0087: 3, H0647: 3, L0769: 3, L0775: 3, H0690: 3, H0696: 3, S3012: 3, L0740: 3, H0543: 3, L0600: 3, H0713: 2, H0663: 2, S0376: 2, S0444: 2, S0408: 2, S0046: 2, H0619: 2, S0300: 2, S0278: 2,				

H0592: 2, H0052: 2, L0157: 2, H0688: 2, H0606: 2, H0674: 2, H0059: 2, H0100: 2, L0763: 2, L0771: 2, L0649: 2, L0633: 2, L0383: 2, H0520: 2, H0435: 2, H0658: 2, H0648: 2, H0436: 2, S0390: 2, L0748: 2, L0777: 2, L0731: 2, L0757: 2, L0759: 2, S0260: 2, H0686: 1, S6024: 1, H0294: 1, S0134: 1, H0657: 1, H0656: 1, S0180: 1, S0212: 1, H0254: 1, S0418: 1, S0354: 1, S0410: 1, H0722: 1, S0045: 1, S0132: 1, H0393: 1, H0550: 1, H0587: 1, H0333: 1, T0109: 1, H0101: 1, H0427: 1, H0575: 1, H0706: 1, T0048: 1, S0474: 1, H0581: 1, S0049: 1, H0309: 1, H0597: 1, H0231: 1, H0009: 1, H0178: 1, H0567: 1, H0024: 1,							

					H0051: 1, H0099: 1, H0594: 1, H0188: 1, S0214: 1, H0604: 1, H0417: 1, H0181: 1, H0673: 1, H0551: 1, H0412: 1, H0413: 1, H0494: 1, H0334: 1, S0150: 1, S0426: 1, H0529: 1, L0373: 1, L0374: 1, L0764: 1, L0385: 1, L0774: 1, L0375: 1, L0654: 1, L0657: 1, L0659: 1, L5623: 1, L0368: 1, L0665: 1, H0702: 1, H0519: 1, H0683: 1, S0328: 1, S0330: 1, H0539: 1, S0378: 1, H0522: 1, S0037: 1, S0028: 1, S0206: 1, L0754: 1, L0750: 1, H0445: 1, H0595: 1, L0591: 1, L0361: 1, L0601: 1, S0192: 1, H0542: 1, H0423: 1 and S0456: 1.		
HSDFS07	1020904	563	2 - 1018	2738	Glu-1 to Asn-6, Glu-14 to Leu-19, Pro-22 to Ile-30, Ser-32 to Asp-40,	L0439: 5, L0777: 4, H0244: 2, S0010: 2, S0386: 2, L0764: 2, L0776: 2, L0809: 2,	

					Ser-44 to Gln-53.	H0519: 2, L0756: 2, L0780: 2, H0369: 1, S0222: 1, S0346: 1, H0050: 1, H0428: 1, L0194: 1, L0455: 1, H0494: 1, L0769: 1, L0806: 1, L0807: 1, L0664: 1, H0520: 1, L0747: 1, L0779: 1, L0759: 1, S0031: 1 and L0592: 1.		
HCOPC09	1021208	564	620 - 378	2739	Glu-49 to Asn-62.	L0764: 3, S0360: 2, H0331: 2, H0575: 2, L0769: 2, H0670: 2, L0747: 2, L0777: 2, L0601: 2, S0358: 1, H0455: 1, H0492: 1, L0021: 1, L0763: 1, L0662: 1, L0803: 1, L0774: 1, L0775: 1, L0809: 1, H0683: 1, H0522: 1, L0743: 1, L0362: 1 and H0422: 1.		
HVVBT22	1021323	565	811 - 2	2740	Pro-5 to Lys-15, Asn-31 to Ala-38, Asp-57 to Arg-64, Ala-75 to Asp-90, Gln-98 to Gly-123, Arg-125 to Gly-142, Met-155 to Gly-160,	H0424: 5, L0766: 3, S0222: 2, S0214: 2, S0422: 2, S0126: 2, S0330: 2, L0759: 2, L0362: 2, L0361: 2, H0653: 2, H0220: 1, H0656: 1, H0341: 1,		

					Leu-162 to Pro-182, Arg-187 to Met-192, Ser-199 to Asp-219, Pro-224 to Pro-253.	H0449: 1, S0376: 1, S0045: 1, H0351: 1, H0587: 1, H0497: 1, S0010: 1, L0471: 1, H0373: 1, H0083: 1, H0266: 1, L0055: 1, H0163: 1, H0591: 1, H0551: 1, H0366: 1, H0509: 1, H0538: 1, L0770: 1, L0772: 1, L0381: 1, L0775: 1, L0653: 1, L0518: 1, L0665: 1, H0144: 1, H0520: 1, H0547: 1, H0689: 1, H0672: 1, S0328: 1, H0539: 1, H0696: 1, L0747: 1, L0752: 1, L0591: 1, L0592: 1, H0216: 1 and S0396: 1.		
HAMFW66	1021327	566	8 - 988	2741	His-3 to Phe-9, Asn-176 to Thr-184, Glu-217 to Lys-225, Lys-263 to Asp-268.	AR053: 3, AR052: 3, AR096: 2, AR033: 2, AR089: 2, AR055: 2, AR104: 1, AR060: 1, AR061: 0, AR039: 0 L0754: 12, S0410: 10, L0766: 9, L0591: 7, L0748: 4, L0752: 4, H0423: 4, H0556: 3, S0360: 3, L0646: 3,		

		L0527: 3, L0596: 3, H0170: 2, H0265: 2, S0114: 2, S0218: 2, H0266: 2, H0615: 2, H0056: 2, H0560: 2, H0561: 2, L0803: 2, L0782: 2, H0547: 2, H0134: 2, H0436: 2, L0756: 2, H0445: 2, L0362: 2, H0543: 2, L0002: 1, H0650: 1, S0418: 1, H0208: 1, S0046: 1, S0476: 1, H0619: 1, H0437: 1, H0550: 1, T0114: 1, H0013: 1, T0048: 1, H0318: 1, L0109: 1, H0050: 1, L0471: 1, S0051: 1, H0083: 1, H0328: 1, H0622: 1, H0604: 1, H0031: 1, H0591: 1, H0551: 1, H0268: 1, H0623: 1, H0100: 1, H0132: 1, L0763: 1, L0667: 1, L0388: 1, L0804: 1, L0776: 1, L0606: 1, L0657: 1, L0659: 1, L0542: 1, L0518: 1, L0809: 1, L0791: 1,				

							L0792: 1, L0793: 1, H0519: 1, H0682: 1, H0648: 1, S0330: 1, S0152: 1, S0406: 1, L0750: 1, L0779: 1, L0757: 1, L0759: 1, L0480: 1, H0542: 1 and H0506: 1.		
HPMBW86	1021661	567	3 - 179	2742	Leu-2 to Gly-15, Val-31 to Gly-40, Gly-45 to Ala-51.		H0341: 1, S0222: 1, H0156: 1, H0052: 1, H0031: 1, L0766: 1, H0658: 1, H0670: 1 and L0612: 1.		
HOFMK02	1021666	568	138 - 230	2743	Thr-24 to Leu-29.		H0415: 2 and H0486: 1.	11p15	108985, 186921, 602092
HOUHK71	1021682	569	311 - 370	2744	Arg-11 to Trp-20.		L0755: 4, H0638: 2, S0342: 1, H0101: 1, H0457: 1, H0051: 1, L0768: 1, L0803: 1, L0650: 1, L0806: 1, L0518: 1, H0689: 1, H0648: 1, L0756: 1 and L0759: 1.		
HCOOW23	1021759	570	54 - 800	2745	Thr-10 to Arg-16, Arg-21 to Ser-31, Asn-97 to Arg-102, Ile-170 to Ser-175, Thr-207 to Gly-213.				
HACMT02	1021794	571	272 - 3	2746			H0685: 2		

HISDS67	1022018	572	2322 - 1756	2747	Gln-4 to Ala-17, Ala-56 to Gln-61, Cys-166 to Ala-182.	L0754: 8, H0553: 4, L0770: 4, L0794: 4, H0615: 3, L0769: 3, L0803: 3, L0439: 3, L0777: 3, L0752: 3, H0052: 2, L0637: 2, L0768: 2, L0805: 2, L0659: 2, L0666: 2, L0664: 2, H0547: 2, H0593: 2, H0682: 2, H0539: 2, H0521: 2, L0744: 2, L0757: 2, L0604: 2, L0601: 2, H0624: 1, H0657: 1, H0656: 1, S0212: 1, H0254: 1, H0662: 1, L0005: 1, S0045: 1, H0619: 1, H0550: 1, H0592: 1, H0013: 1, H0036: 1, H0618: 1, H0620: 1, H0023: 1, S0051: 1, H0188: 1, H0028: 1, H0428: 1, T0006: 1, H0213: 1, L0455: 1, H0135: 1, H0038: 1, H0616: 1, H0264: 1, H0413: 1, T0069: 1, S0038: 1, H0100: 1, L0763: 1, L0638: 1, L5565: 1,		

						L0761: 1, L0667: 1, L0804: 1, L0650: 1, L0375: 1, L0776: 1, L0807: 1, L0809: 1, L0519: 1, L0663: 1, L0665: 1, H0520: 1, S0126: 1, H0684: 1, H0435: 1, H0659: 1, H0648: 1, S0190: 1, S0404: 1, H0555: 1, L0741: 1, L0751: 1, L0747: 1, L0753: 1 and L0758: 1.		
HOVAA59	1022037	573	2892 - 1309	2748	Pro-1 to Gly-10, Pro-20 to Gly-34, Pro-36 to Gly-45, Ala-51 to Pro-65, Val-78 to Arg-83, Gln-89 to Gly-98, Lys-114 to Val-119, Arg-158 to Ala-164, Thr-306 to Lys-313.	L0601: 4, H0617: 3, L0794: 2, L0629: 2, L0657: 2, L0604: 2, T0049: 1, S0218: 1, L0785: 1, S0442: 1, H0733: 1, H0411: 1, T0109: 1, H0428: 1, H0673: 1, S0366: 1, H0040: 1, H0616: 1, L0763: 1, L0375: 1, L0805: 1, L0658: 1, H0593: 1, H0658: 1, H0672: 1, L0743: 1, L0744: 1, L0748: 1, L0740: 1, L0751: 1, L0754: 1, L0750: 1, L0596: 1, L0485: 1 and		

HOCPL72	1022059	574	2 - 1099	2749	Pro-1 to Glu-14, Pro-26 to Val-33, Tyr-167 to Tyr-174, Pro-188 to Ser-196.	H0721: 1.	L0766: 3, H0457: 2, H0706: 1, H0015: 1, H0373: 1, H0266: 1, H0553: 1, H0551: 1, H0509: 1, L0761: 1, L0665: 1, H0144: 1, H0689: 1, H0660: 1 and S0328: 1.		
HCOMM05	1022082	575	1 - 840	2750	Gln-19 to Asp-38, Pro-46 to Thr-55, Leu-96 to Gly-104, Ala-114 to Ala-119, Gln-125 to Trp-131, Pro-133 to Pro-141, Phe-144 to Glu-150, Glu-180 to Val-185, Glu-192 to Glu-197, Glu-254 to Leu-262, Met-272 to Ser-280.	AR089: 1, AR096: 1, AR061: 1, AR060: 1, AR033: 1, AR055: 0, AR052: 0, AR039: 0, AR104: 0 L0508: 9, H0620: 7, L0774: 6, L0509: 6, S0408: 5, L0750: 5, L0601: 5, L0515: 4, L0512: 4, H0594: 3, L0805: 3, L0514: 3, L0511: 3, H0670: 3, L0755: 3, H0556: 2, H0686: 2, S0358: 2, S0444: 2, H0199: 2, H0181: 2, H0617: 2, H0494: 2, L0505: 2, L0502: 2, L0769: 2, L0803: 2, L0809: 2, L0528: 2, L0663: 2, L0752: 2, H0657: 1,				

HLYDC86	1022162	576	3 - 947	2751	Pro-39 to Arg-45, Arg-52 to Ile-60, Glu-87 to Cys-96, Thr-108 to Ser-114, Thr-121 to Glu-128,	H0255: 1, S0420: 1, S0442: 1, S0360: 1, H0549: 1, H0586: 1, L0021: 1, H0036: 1, H0052: 1, H0597: 1, H0086: 1, H0012: 1, S0336: 1, H0606: 1, H0124: 1, L0504: 1, L0763: 1, L0627: 1, L0373: 1, L0764: 1, L0499: 1, L0498: 1, L0497: 1, L0376: 1, L0653: 1, L0493: 1, L0510: 1, L0513: 1, L0384: 1, L0789: 1, L0666: 1, L0665: 1, H0689: 1, H0660: 1, H0672: 1, S0328: 1, S0330: 1, S0454: 1, S0406: 1, S0432: 1, L0754: 1, L0747: 1, L0749: 1, L0779: 1, L0777: 1, L0731: 1, L0759: 1, S0434: 1 and H0506: 1.	L0794: 4, S0002: 2, L0803: 2, H0445: 2, H0250: 1, H0412: 1, S0344: 1, L0761: 1, L0809: 1, H0435: 1 and	14q24.3	104311, 109150, 182600, 245200, 601208

					Met-133 to Thr-141, Asn-154 to Ala-169, Glu-174 to His-179, Gln-205 to Gln-213, Pro-222 to Phe-231, Ser-259 to Phe-265, Leu-282 to Ser-288.	L0747: 1.			
HTLEP21	1022167	577	92 - 457	2752		H0253: 1 and L0767: 1.			
HVCAS77	1022313	578	170 - 1072	2753	Glu-7 to Leu-18, Glu-75 to Arg-80, Gln-152 to Gln-157, Gln-202 to Lys-219, Ser-259 to Gly-266, Glu-277 to His-287.	L0766: 7, L0769: 6, S0418: 4, L0747: 4, S0424: 3, H0341: 2, S0278: 2, L0471: 2, H0083: 2, H0538: 2, L0770: 2, L0771: 2, L0775: 2, L0809: 2, H0520: 2, L0744: 2, L0754: 2, L0777: 2, L0759: 2, L0597: 2, S0026: 2, H0667: 2, H0171: 1, H0686: 1, S0212: 1, H0125: 1, S0420: 1, S0358: 1, S0376: 1, S0360: 1, S0046: 1, H0393: 1, H0333: 1, H0575: 1, H0581: 1, H0309: 1, H0046: 1, H0567: 1, H0188: 1, H0428: 1, H0553: 1, H0135: 1,			

						H0040: 1, T0041: 1, L0369: 1, L0763: 1, L0643: 1, L0764: 1, L0773: 1, L0804: 1, L0375: 1, L0806: 1, L0776: 1, L0655: 1, L0783: 1, L0382: 1, L0666: 1, H0144: 1, H0593: 1, H0435: 1, H0659: 1, H0660: 1, H0666: 1, L0750: 1, L0755: 1, L0731: 1, L0757: 1 and H0543: 1.		
HOGCA79	1022627	579	210 - 635	2754	Thr-69 to Phe-77, Asp-80 to Thr-85.	H0547: 5, L0747: 4, L0766: 3, H0328: 2, H0551: 2, L0774: 2, H0435: 2, H0659: 2, H0436: 2, L0740: 2, L0754: 2, L0759: 2, L0596: 2, H0657: 1, H0341: 1, S0418: 1, S0360: 1, S0007: 1, H0229: 1, H0486: 1, H0013: 1, H0156: 1, H0037: 1, L0055: 1, L0455: 1, H0163: 1, H0616: 1, L0060: 1, H0560: 1, H0529: 1, L0763: 1, L0770: 1, L0764: 1, L0767: 1,		

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HSKJP93	1022663	580	2 - 247	2755	Ser-3 to Gln-9, Thr-25 to Lys-40.	L0777: 9, H0622: 3, L0771: 3, L0747: 3, L0752: 3, H0657: 2, L0763: 2, L0517: 2, L0666: 2, L0748: 2, L0590: 2, H0050: 1, H0188: 1, H0687: 1, H0428: 1, H0039: 1, H0031: 1, H0032: 1, H0674: 1, S0036: 1, H0652: 1, L0369: 1, L0520: 1, L0769: 1, L0765: 1, L0773: 1, L0662: 1, L0794: 1, L0803: 1, L0804: 1, L0775: 1, L0651: 1, L0655: 1, L0659: 1, L0782: 1, L0789: 1, L0665: 1, L0438: 1,		

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HAZAA64	1022719	581	106 - 705	2756	Asn-58 to Thr-64, Ile-72 to Ser-78, Gly-119 to Lys-128, Thr-185 to Leu-200.	H0695: 414, H0580: 44, L0777: 6, L0731: 6, H0052: 5, L0766: 5, L0747: 5, H0617: 4, H0494: 4, S0045: 3, H0083: 3, H0181: 3, H0038: 3, L0637: 3, L0779: 3, L0758: 3, H0484: 2, H0599: 2, S0049: 2, H0428: 2, L0774: 2, L0775: 2, L0518: 2, L0439: 2, L0750: 2, L0596: 2, L0588: 2, L0599: 2, L0601: 2, H0265: 1, H0556: 1, T0002: 1, S0040: 1, H0294: 1, H0341: 1, H0254: 1, H0255: 1, S0420: 1, S0444: 1, S0360: 1, H0208: 1, H0492: 1, L0623: 1, H0013: 1, S0280: 1, H0156: 1, L0021: 1, S0010: 1, H0194: 1, H0046: 1,		

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							14q24.1	
HSEBD72	1022904	582	140 - 430	2757	Thr-11 to Arg-16, Asn-78 to Asp-84.	S0406: 9, L0754: 9, L0747: 9, L0752: 9, H0556: 7, L0742: 7, L0758: 7, S0410: 6, H0658: 6, L0779: 6, H0656: 5, S0444: 5, S0360: 5, H0660: 5, H0657: 4, H0255: 4, H0545: 4, H0012: 4, H0620: 4, H0708: 4,		

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HDPYE27	1022911	583	380 - 1066	2758	Trp-1 to Ser-8, His-11 to Asn-16, Gln-19 to Pro-25, Gly-38 to Gly-44, Leu-54 to Arg-62, Ser-70 to Asp-78, Gln-83 to Ser-88, Thr-99 to Asn-105, Ser-123 to Val-135, Pro-143 to Arg-169, His-194 to Tyr-206.	L0521: 1, L0626: 1, L0767: 1, L0649: 1, L0774: 1, L0375: 1, L0806: 1, L0807: 1, L0517: 1, L0529: 1, L0665: 1, H0520: 1, S0126: 1, H0690: 1, H0709: 1, S0152: 1, S0044: 1, S0404: 1, H0555: 1, S0027: 1, S0028: 1, S0032: 1, H0444: 1, L0596: 1, L0605: 1, S0276: 1, H0542: 1, H0543: 1 and H0352: 1.	AR096: 1, AR104: 1, AR052: 0, AR060: 0, AR089: 0, AR039: 0, AR061: 0, AR055: 0, AR033: 0 L0740: 18, H0521: 15, S0003: 14, L0777: 13, L0754: 12, L0756: 12, H0710: 11, L0747: 10, L0766: 9, L0438: 9, L0750: 7, L0752: 7, H0622: 6, H0522: 6, L0439: 6, L0757: 6, H0156: 5, L0775: 5, S0136: 5, L0731: 5,	9q13-q21	190100, 200150, 229300, 229300, 600429, 600884, 600974, 600998, 602014

		S0026: 5, H0661: 4, H0638: 4, H0581: 4, H0052: 4, H0032: 4, L0598: 4, L0770: 4, L0649: 4, H0144: 4, H0547: 4, H0659: 4, S0360: 3, L0471: 3, S6028: 3, S0214: 3, L0483: 3, H0553: 3, H0038: 3, L0769: 3, L0764: 3, L0774: 3, L0659: 3, L0666: 3, H0436: 3, L0744: 3, L0599: 3, S0196: 3, H0713: 2, S0116: 2, S0408: 2, H0632: 2, H0013: 2, S0474: 2, L0163: 2, T0010: 2, H0510: 2, H0375: 2, H0271: 2, H0615: 2, H0617: 2, S0036: 2, H0090: 2, H0616: 2, T0041: 2, H0494: 2, S0438: 2, S0344: 2, L0662: 2, L0768: 2, L0776: 2, L0665: 2, H0723: 2, H0520: 2, H0519: 2, S0328: 2, S0330: 2, S0028: 2, L0748: 2, L0779: 2,				

		L0753: 2, L0758: 2, L0597: 2, L0592: 2, L0485: 2, H0543: 2, H0422: 2, H0677: 2, H0624: 1, H0171: 1, H0556: 1, S0040: 1, H0716: 1, H0657: 1, H0669: 1, S0420: 1, S0442: 1, S0358: 1, S0444: 1, H0580: 1, H0208: 1, S0045: 1, H0645: 1, L0717: 1, H0351: 1, H0549: 1, H0550: 1, S0222: 1, H0431: 1, H0614: 1, H0455: 1, H0587: 1, T0040: 1, T0060: 1, H0427: 1, S0280: 1, H0706: 1, H0421: 1, S0049: 1, H0544: 1, H0545: 1, H0150: 1, H0569: 1, H0050: 1, H0373: 1, N0007: 1, H0201: 1, S0051: 1, S0318: 1, S0334: 1, H0687: 1, S0312: 1, H0428: 1, T0006: 1, H0031: 1, H0644: 1, H0212: 1, S0364: 1, L0455: 1, H0708: 1,					

		H0591: 1, H0040: 1, T0067: 1, H0379: 1, H0264: 1, H0488: 1, T0069: 1, T0004: 1, S0038: 1, H0641: 1, H0646: 1, S0144: 1, H0538: 1, S0210: 1, S0422: 1, S0002: 1, S0426: 1, UNKWN: 1, H0529: 1, L0763: 1, L0371: 1, L0637: 1, L0761: 1, L0630: 1, L0372: 1, L0646: 1, L0771: 1, L0773: 1, L0364: 1, L0803: 1, L0651: 1, L0806: 1, L0655: 1, L0661: 1, L0657: 1, L0526: 1, L0809: 1, L0544: 1, L0663: 1, S0148: 1, S0310: 1, L0352: 1, H0593: 1, S0126: 1, H0435: 1, H0670: 1, H0648: 1, H0539: 1, L0602: 1, H0696: 1, S0044: 1, H0555: 1, H0478: 1, L0743: 1, L0751: 1, L0745: 1, L0755: 1, H0445: 1, S0308: 1, S0394: 1,			

HCRQL51	1022997	584	47 - 1030	2759	Ser-35 to Gly-40, Ser-103 to His-109, Tyr-151 to Gly-159, Pro-216 to Glu-224, Asn-249 to Trp-258, Pro-278 to Glu-284.	L0480: 1, L0362: 1, S0106: 1, S0192: 1, S0242: 1, H0542: 1, H0423: 1, S0424: 1 and S0446: 1.	H0013: 10, H0644: 6, H0144: 6, H0615: 5, L0748: 4, L0777: 4, H0393: 3, T0114: 3, H0012: 3, H0024: 3, H0529: 3, L0438: 3, H0547: 3, L0439: 3, H0624: 2, H0170: 2, H0341: 2, L0005: 2, H0370: 2, H0050: 2, L0471: 2, H0031: 2, H0038: 2, L0750: 2, L0758: 2, H0595: 2, L0592: 2, H0171: 1, S0212: 1, S0418: 1, S0356: 1, H0619: 1, L0717: 1, S0222: 1, H0427: 1, H0036: 1, H0046: 1, H0620: 1, H0594: 1, H0266: 1, H0328: 1, L0142: 1, H0591: 1, H0616: 1, H0059: 1, H0625: 1, S0210: 1, L0768: 1, H0520: 1, H0519: 1,	7q32	180105, 190900, 222800, 246900

							H0672: 1, S0152: 1, H0555: 1, L0742: 1, L0779: 1, H0445: 1, S0194: 1, H0422: 1 and L0698: 1.		
HDTCC55	1023046	585	195 - 533	2760	Ser-26 to Ser-32.		H0486: 1 and L0766: 1.		
HOOJQ91	1023049	586	1307 - 525	2761	Ala-2 to Thr-9.				
HCE4K28	1023227	587	238 - 840	2762	Phe-15 to Gly-29.		L0750: 6, L0766: 5, L0809: 4, L0747: 4, L0758: 4, S0354: 3, H0617: 3, L0775: 3, L0783: 3, H0690: 3, S0406: 3, L0753: 3, L0601: 3, H0255: 2, S0007: 2, H0618: 2, H0253: 2, H0309: 2, H0150: 2, H0428: 2, H0553: 2, H0494: 2, L0770: 2, L0771: 2, L0803: 2, L0774: 2, L0666: 2, S0330: 2, H0539: 2, H0134: 2, L0777: 2, L0592: 2, H0624: 1, H0686: 1, H0664: 1, S0408: 1, H0489: 1, H0580: 1, H0351: 1, S0278: 1, H0333: 1, H0559: 1, S0474: 1, H0052: 1,		

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						10q26.13-q26.3	
HPDVY62	1023264	588	2 - 1126	2763	H0624: 2, H0586: 2, H0031: 2, L0748: 2, L0439: 2, H0171: 1, S0356: 1, S0376: 1, H0052: 1, H0251: 1, H0050: 1, H0014: 1, H0051: 1, H0647: 1, L0789: 1, H0144: 1, H0658: 1, H0521: 1, L0754: 1, L0752: 1, S0436: 1, S0276: 1 and S0424: 1.		

HLHDK42	1023339	589	1 - 351	2764	Asn-19 to Asp-29, Leu-34 to Gly-41.	H0024: 2 and H0596: 1.		
HLDRQ55	1023375	590	2 - 421	2765		H0081: 1, H0510: 1 and H0144: 1.		
HVVBI06	1023414	591	1449 - 646	2766		H0543: 7, H0341: 6, S0003: 5, L0740: 5, L0747: 5, H0619: 4, H0575: 4, H0318: 4, S0206: 4, L0750: 4, L0588: 4, H0542: 4, H0265: 3, S0358: 3, S0046: 3, H0486: 3, H0069: 3, S0022: 3, L0666: 3, H0556: 2, S0116: 2, S0212: 2, S0418: 2, S0376: 2, S0360: 2, S0132: 2, H0497: 2, L0471: 2, H0090: 2, H0551: 2, H0494: 2, H0633: 2, S0144: 2, H0529: 2, L0662: 2, L0655: 2, L0664: 2, H0144: 2, H0547: 2, S0152: 2, L0757: 2, H0445: 2, H0624: 1, S6024: 1, S0114: 1, S0134: 1, S0218: 1, H0650: 1, H0657: 1, H0656: 1, H0663: 1, H0662: 1,	X	

		S0420: 1, H0580: 1, S0007: 1, H0393: 1, H0441: 1, H0331: 1, H0574: 1, T0039: 1, T0114: 1, H0427: 1, H0004: 1, H0581: 1, H0052: 1, H0251: 1, H0184: 1, T0115: 1, H0046: 1, H0009: 1, H0050: 1, H0620: 1, H0024: 1, H0373: 1, H0510: 1, S6028: 1, H0266: 1, H0267: 1, S0318: 1, S0316: 1, H0028: 1, S0214: 1, H0328: 1, H0428: 1, H0031: 1, H0644: 1, H0628: 1, H0169: 1, H0598: 1, H0038: 1, H0616: 1, H0380: 1, H0272: 1, H0412: 1, S0150: 1, H0647: 1, H0646: 1, S0344: 1, S0210: 1, S0422: 1, S0002: 1, L0769: 1, L0372: 1, L0646: 1, L0649: 1, L0774: 1, L0775: 1, L0438: 1, H0519: 1, S0126: 1, H0660: 1, H0666: 1,				

					H0672: 1, S0380: 1, L0602: 1, H0134: 1, S0390: 1, S3014: 1, S0027: 1, S0028: 1, L0748: 1, L0439: 1, L0754: 1, L0749: 1, L0756: 1, L0731: 1, H0444: 1, H0595: 1, L0595: 1, L0361: 1, L0603: 1, H0667: 1, H0422: 1 and S0424: 1.		
HOCME51	1023422	592	2 - 319	2767	Glu-36 to Thr-44, His-72 to Tyr-78, Glu-82 to Tyr-88.	H0623: 4, H0046: 3, H0581: 2, H0023: 2, H0083: 2, L0791: 2, L0438: 2, H0547: 2, H0539: 2, L0750: 2, H0583: 1, H0341: 1, H0125: 1, S0420: 1, S0356: 1, H0208: 1, S0045: 1, H0261: 1, S0222: 1, H0592: 1, H0635: 1, H0318: 1, H0052: 1, L0163: 1, H0266: 1, H0494: 1, L0475: 1, H0538: 1, L3904: 1, S0374: 1, H0660: 1, H0522: 1, H0134: 1, S0028: 1, S0206: 1, L0439: 1, L0753: 1, L0595: 1,		

HPDOP74	1023531	593	1659 - 307	2768	Leu-23 to Asp-31, Gln-46 to Ile-69, Ile-120 to Lys-128, Pro-148 to Asp-154, Pro-216 to Val-223, Asn-261 to Ala-273, Gly-290 to Gln-299, Lys-305 to Tyr-312, Glu-341 to Ala-346, Pro-394 to Met-404, Ser-418 to Ser-440, Glu-442 to Gly-450.	H0542: 1, H0543: 1 and H0506: 1.	L0591: 11, H0069: 9, H0494: 9, L0588: 7, H0543: 7, H0657: 6, H0318: 6, T0042: 6, H0547: 6, H0556: 5, L0665: 5, L0751: 5, H0423: 5, T0002: 4, H0050: 4, L0747: 4, L0779: 4, H0341: 3, H0638: 3, H0580: 3, H0393: 3, H0052: 3, H0266: 3, H0617: 3, H0616: 3, H0413: 3, H0521: 3, L0754: 3, L0596: 3, L0362: 3, H0422: 3, H0265: 2, L0470: 2, H0305: 2, H0637: 2, S0045: 2, H0370: 2, T0109: 2, H0156: 2, H0599: 2, H0575: 2, H0036: 2, H0618: 2, H0253: 2, L0483: 2, H0181: 2, H0038: 2, H0561: 2, H0646: 2, L0770: 2, L0769: 2, L0646: 2, L0521: 2, L0662: 2, L0768: 2, L0803: 2,		

		L0653: 2, L0776: 2, L0789: 2, L0438: 2, L0602: 2, H0134: 2, S0027: 2, L0743: 2, L0587: 2, L0608: 2, L0593: 2, S0106: 2, H0542: 2, H0170: 1, H0294: 1, T0049: 1, S0134: 1, S0218: 1, H0484: 1, H0255: 1, H0669: 1, H0661: 1, H0662: 1, S0354: 1, S0360: 1, L0717: 1, S0278: 1, H0437: 1, H0592: 1, H0586: 1, H0587: 1, H0574: 1, H0632: 1, H0492: 1, T0039: 1, L0586: 1, H0635: 1, H0581: 1, H0251: 1, H0263: 1, T0110: 1, H0231: 1, H0327: 1, H0544: 1, H0546: 1, H0046: 1, H0178: 1, H0014: 1, H0015: 1, H0083: 1, H0099: 1, S0318: 1, H0687: 1, S0003: 1, H0615: 1, H0428: 1, T0006: 1, H0031: 1, H0165: 1, L0455: 1,				

		H0124: 1, S0366: 1, H0135: 1, H0634: 1, H0551: 1, H0264: 1, H0412: 1, H0059: 1, H0102: 1, S0039: 1, T0041: 1, H0560: 1, H0359: 1, H0509: 1, S0150: 1, L0763: 1, L0761: 1, L0800: 1, L0771: 1, L0648: 1, L0363: 1, L0794: 1, L0386: 1, L0375: 1, L0376: 1, L0784: 1, L0805: 1, L0654: 1, L0606: 1, L0659: 1, L0384: 1, L0382: 1, L0809: 1, L0788: 1, L0666: 1, L0663: 1, H0144: 1, H0702: 1, S0374: 1, H0593: 1, S0122: 1, H0690: 1, H0435: 1, H0658: 1, H0660: 1, H0672: 1, S0330: 1, H0539: 1, S0152: 1, H0522: 1, H0436: 1, H0626: 1, S3014: 1, L0749: 1, L0756: 1, L0758: 1, S0031: 1, S0260: 1, H0444: 1, H0445: 1,				

HMSOH12	1023545	594	1 - 1077	2769	Lys-25 to Asp-31, His-46 to Glu-54, Ser-80 to Lys-86, Val-109 to Lys-115, Arg-143 to Met-149, Lys-193 to Arg-198, His-253 to Gly-259.	H0707: 1, L0592: 1, H0653: 1, H0665: 1, S0276: 1 and S0424: 1.	L0731: 12, L0439: 10, L0747: 8, L0770: 7, L0662: 6, L0775: 5, L0663: 5, H0423: 5, L0769: 4, L0752: 4, H0422: 4, H0657: 3, H0656: 3, S0356: 3, S0360: 3, S0222: 3, H0318: 3, H0083: 3, L0764: 3, L0768: 3, L0766: 3, L0809: 3, L0665: 3, H0547: 3, H0682: 3, H0659: 3, H0672: 3, L0750: 3, L0588: 3, L0591: 3, S0007: 2, H0581: 2, H0644: 2, H0412: 2, S0002: 2, S0426: 2, L0648: 2, L0364: 2, L0774: 2, L0375: 2, L0655: 2, L0666: 2, L0664: 2, H0520: 2, H0435: 2, H0666: 2, H0651: 2, H0521: 2, S0027: 2, L0740: 2, L0755: 2, L0757: 2, L0758: 2, H0542: 2,		

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						H0436: 1, L0748: 1, L0756: 1, L0779: 1, H0595: 1, L0608: 1, L0593: 1, L0595: 1, L0362: 1, S0026: 1, H0136: 1 and S0192: 1.		
HOPJG50	1023584	595	866 - 507	2770	Thr-18 to Asn-31, Lys-39 to Ser-47, Ser-71 to His-76, Gln-113 to Lys-120.	L0748: 2, L0749: 2, L0731: 2, H0624: 1, H0486: 1, H0309: 1, L0769: 1, L0653: 1, H0684: 1 and L0779: 1.	4		
HDUAB04	1023585	596	3 - 371	2771	Thr-21 to Asn-34, Lys-42 to Ser-50, Ser-74 to His-79, Gln-116 to Lys-123.		4		
HVCAA38	1023632	597	27 - 818	2772	Asn-12 to Thr-17, Gln-60 to Arg-66, Ser-71 to Asn-83, Thr-89 to Ala-96, Gln-120 to Thr-126, Glu-149 to Lys-154, Thr-213 to Ser-219, Arg-231 to Tyr-244, Trp-252 to Trp-259.		22q12.1	123620, 188826, 600850, 601669	
HIBCN87	1023837	598	1753 - 776	2773	Arg-1 to Cys-7, Val-96 to Arg-105, Glu-130 to Leu-135, Pro-207 to Arg-225, Asp-231 to Cys-251, Pro-259 to Ile-264,	L0439: 8, L0794: 5, L0758: 5, L0805: 4, L0809: 4, S0358: 3, L0769: 3, L0776: 3, L0665: 3, L0438: 3, H0658: 3, L0717: 2,	22q13.1	103050, 103050, 124030, 124030, 138981, 182380,	

				Pro-294 to Pro-304, Glu-310 to Ile-316, Ser-320 to Pro-326.	H0052: 2, H0059: 2, L0662: 2, L0803: 2, L0789: 2, H0690: 2, L0748: 2, H0556: 1, S0114: 1, H0583: 1, S0376: 1, H0600: 1, H0618: 1, H0253: 1, T0010: 1, H0252: 1, H0617: 1, H0038: 1, H0100: 1, L0520: 1, L0761: 1, L0768: 1, L0766: 1, L0783: 1, L0666: 1, L0663: 1, H0547: 1, H0593: 1, H0683: 1, H0670: 1, H0648: 1, H0436: 1, L0751: 1, L0755: 1, H0445: 1 and H0352: 1.		188826, 190040, 190040, 190040
HPCOM04	1024000	599	36 - 818	2774	Arg-1 to Gln-7, Pro-18 to Leu-23, Asp-42 to Ile-47, Gln-56 to Glu-63, Glu-93 to Ile-105, Glu-132 to Leu-137, Ile-202 to Leu-208, Asn-220 to Lys-226, Asn-254 to Phe-259.	L0438: 3, L0764: 2, H0659: 2, L0754: 2, H0589: 1, H0580: 1, H0013: 1, H0622: 1, H0617: 1, T0067: 1, L0767: 1, L0775: 1, L0655: 1, L0659: 1, L0666: 1, H0648: 1, S0330: 1, H0710: 1, L0748: 1, L0740: 1, L0747: 1, L0753: 1, L0480: 1 and L0599: 1.	22q11.1	231950, 600850

HUCPU06	1024069	600	609 - 313	2775		L0766: 5, L0770: 2, L0803: 2, L0666: 2, L0747: 2, L0603: 2, H0686: 1, S0420: 1, L0662: 1, L0794: 1, L0783: 1, L0383: 1, L0809: 1, L0665: 1, H0684: 1, H0658: 1 and L0750: 1.		
HPAME01	1024332	601	564 - 1061	2776	Cys-1 to Gln-6, Val-19 to Ala-24.	L0439: 12, L0743: 5, L0747: 5, L0749: 5, L0769: 4, L0794: 4, L0731: 4, L0803: 3, L0774: 3, L0809: 3, H0254: 2, H0393: 2, H0318: 2, H0052: 2, H0188: 2, H0040: 2, L0659: 2, L0790: 2, L0438: 2, L0753: 2, H0423: 2, H0265: 1, H0685: 1, H0341: 1, H0402: 1, S0360: 1, H0580: 1, L0717: 1, H0550: 1, H0370: 1, H0333: 1, H0643: 1, H0486: 1, H0013: 1, H0250: 1, H0599: 1, H0042: 1, H0253: 1, H0327: 1, H0046: 1, H0086: 1, H0012: 1,		

						S0051: 1, H0399: 1, H0687: 1, H0286: 1, H0617: 1, H0032: 1, H0673: 1, S0036: 1, H0135: 1, H0591: 1, H0087: 1, H0100: 1, T0041: 1, H0494: 1, H0561: 1, H0130: 1, L0638: 1, L0764: 1, L0662: 1, L0804: 1, L0651: 1, L0657: 1, L0783: 1, L0666: 1, L0664: 1, L0665: 1, L0352: 1, H0547: 1, H0519: 1, H0682: 1, H0684: 1, H0521: 1, S0044: 1, H0631: 1, S0206: 1, L0754: 1, L0779: 1, L0780: 1, L0597: 1, H0543: 1, H0422: 1 and H0506: 1.		
HTTJS76	1024472	602	3 - 392	2777	Pro-1 to His-22, Lys-45 to Arg-59, Asp-77 to Pro-88, Ser-109 to Glu-119.	L0740: 15, L0754: 7, L0747: 6, L0777: 6, L0662: 5, H0539: 5, L0439: 5, L0758: 5, L0438: 4, L0748: 4, S0444: 3, H0031: 3, H0553: 3, L0770: 3, L0774: 3, L0749: 3, L0756: 3, L0755: 3,		

		L0757: 3, S0300: 2, H0427: 2, H0046: 2, H0123: 2, H0264: 2, H0413: 2, L0646: 2, L0794: 2, L0663: 2, H0547: 2, H0672: 2, L0744: 2, L0779: 2, L0731: 2, L0362: 2, S0040: 1, H0713: 1, S0400: 1, S0354: 1, S0358: 1, S0376: 1, S0408: 1, H0722: 1, S0045: 1, S0476: 1, H0393: 1, S0222: 1, H0643: 1, S0280: 1, H0156: 1, L0105: 1, T0048: 1, H0230: 1, H0052: 1, H0251: 1, H0545: 1, L0157: 1, H0014: 1, S6028: 1, S0036: 1, H0634: 1, H0616: 1, H0551: 1, T0067: 1, L0598: 1, L0637: 1, L0764: 1, L0773: 1, L0521: 1, L0533: 1, L0804: 1, L0806: 1, L0776: 1, L0657: 1, L0634: 1, L0659: 1, L0783: 1, L0809: 1, L0666: 1,				

					H0519: 1, S0126: 1, H0689: 1, H0658: 1, H0666: 1, H0648: 1, H0651: 1, S0328: 1, S0152: 1, S0350: 1, H0521: 1, H0696: 1, S0146: 1, L0750: 1, L0752: 1, L0759: 1, H0445: 1, L0684: 1, L0686: 1, S0434: 1, S0436: 1, L0599: 1, L0361: 1 and S0106: 1.	8p22	148370, 238600, 238600, 238600, 238600, 600143, 601385, 602629
HCORI57	1024556	603	230 - 1237	2778	Gly-29 to Glu-35, Met-57 to Lys-64, Ser-104 to Ser-109, Tyr-122 to Val-128, Pro-144 to Asp-153, Pro-244 to Gly-253, Arg-323 to Pro-330.	H0553: 9, H0624: 4, L0471: 4, H0619: 3, H0494: 3, H0520: 3, H0547: 3, S0126: 3, L0755: 3, H0013: 2, H0031: 2, H0644: 2, H0040: 2, L0659: 2, L0666: 2, L0665: 2, H0144: 2, H0519: 2, H0670: 2, L0780: 2, L0361: 2, S0026: 2, H0171: 1, H0661: 1, S0360: 1, H0244: 1, H0156: 1, L0021: 1, S0010: 1, H0052: 1, H0046: 1, L0163: 1, S0214: 1, L0142: 1, H0032: 1, H0551: 1,		

					H0059: 1, L0598: 1, L0520: 1, L0769: 1, L0637: 1, L0768: 1, L0803: 1, L0804: 1, L0653: 1, L0657: 1, L0383: 1, H0690: 1, H0435: 1, H0658: 1, S0330: 1, H0518: 1, S0152: 1, S0044: 1, S0027: 1, L0754: 1, L0747: 1, L0750: 1, L0731: 1, L0608: 1, L0593: 1, L0594: 1 and H0667: 1.		
HNORG50	1024624	604	2 - 1120	2779	Ile-1 to Gln-18, Lys-69 to Gln-74, Ala-81 to Arg-86, Lys-102 to Lys-107, Glu-146 to Val-153, His-156 to Ile-161, Glu-195 to Ser-207, Asp-306 to Leu-316, Ala-318 to Gly-333, Gln-346 to Asp-352.	L0601: 25, S0474: 22, H0521: 17, S0278: 16, H0542: 14, H0543: 13, L0596: 11, H0580: 10, H0494: 10, H0575: 8, L0659: 8, H0581: 7, H0559: 6, H0031: 6, L0655: 6, S3014: 6, S0027: 6, L0591: 6, H0657: 5, S0358: 5, S0360: 5, H0457: 5, H0529: 5, L0666: 5, S0152: 5, L0748: 5, L0731: 5, H0583: 4, H0650: 4, H0587: 4, H0318: 4, H0040: 4,		

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T0042: 1, H0280: 1, H0560: 1, H0509: 1, H0646: 1, H0538: 1, L0762: 1, L0638: 1, L0637: 1, L0372: 1, L0642: 1, L0643: 1, L0773: 1, L0648: 1, L0363: 1, L0794: 1, L0381: 1, L0804: 1, L0774: 1, L0775: 1, L0806: 1, L0805: 1, L0776: 1, L0383: 1, L0663: 1, H0144: 1, H0697: 1, S0374: 1, H0691: 1, L0438: 1, H0519: 1, H0690: 1, H0682: 1, H0684: 1, H0435: 1, H0658: 1, H0648: 1, S0328: 1, H0539: 1, H0518: 1, S0044: 1, H0134: 1, H0214: 1, H0555: 1, H0627: 1, S0432: 1, S3012: 1, S0028: 1, S0032: 1, L0743: 1, L0749: 1, L0779: 1, L0777: 1, L0757: 1, L0597: 1, L0599: 1, L0608: 1, H0665: 1, S0194: 1 and S0424: 1.							

HWLVR07	1024915	605	687 - 328	2780	Lys-28 to Thr-33, Asn-35 to Lys-53, Ala-98 to Glu-104.			
HOPKF60	1025047	606	1132 - 197	2781	Glu-41 to Lys-46, Ser-49 to Glu-55, Asp-109 to Arg-114, His-133 to Asp-138, Arg-170 to Glu-181, Ala-246 to Pro-254, Lys-282 to Ser-287, Ala-296 to Asp-302.	S0358: 10, H0584: 9, S0420: 8, L0439: 8, H0543: 8, H0250: 7, H0618: 7, L0601: 7, S0046: 6, H0424: 6, H0251: 5, H0046: 5, L0438: 5, H0435: 5, H0136: 5, S0045: 4, H0599: 4, H0494: 4, H0561: 4, H0547: 4, H0539: 4, L0748: 4, L0751: 4, S0212: 3, S0007: 3, H0486: 3, H0706: 3, H0253: 3, H0545: 3, S0036: 3, H0040: 3, H0551: 3, H0264: 3, H0132: 3, H0529: 3, H0144: 3, H0520: 3, H0448: 3, H0445: 3, H0665: 3, H0423: 3, H0677: 3, H0624: 2, S0040: 2, H0341: 2, H0484: 2, H0125: 2, S0360: 2, S0222: 2, H0586: 2, H0497: 2, H0575: 2, H0318: 2, H0052: 2,		

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		H0041: 1, H0123: 1, H0050: 1, H0012: 1, H0620: 1, H0014: 1, L0163: 1, H0051: 1, S0051: 1, T0010: 1, H0083: 1, H0266: 1, H0179: 1, H0271: 1, H0292: 1, H0286: 1, S0022: 1, H0039: 1, H0553: 1, H0628: 1, H0617: 1, H0383: 1, H0598: 1, H0135: 1, H0087: 1, H0380: 1, H0412: 1, H0413: 1, H0056: 1, H0100: 1, T0041: 1, S0015: 1, H0625: 1, S0464: 1, S0294: 1, S0438: 1, H0509: 1, H0130: 1, H0646: 1, H0652: 1, S0344: 1, S0374: 1, L0565: 1, T0068: 1, H0693: 1, H0519: 1, H0593: 1, H0684: 1, H0658: 1, H0670: 1, H0660: 1, H0518: 1, S0332: 1, H0522: 1, H0694: 1, H0555: 1, H0479: 1, H0447: 1, H0626: 1, S3014: 1,				

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HBDAD74	1025102	607	2 - 406	2782	Gly-22 to Glu-28, Glu-42 to Arg-60, Leu-67 to Glu-89, Asp-106 to Thr-118, Gln-120 to Ile-130.	L0766: 7, L0803: 4, L0779: 3, H0421: 2, H0615: 2, L0382: 2, L0748: 2, L0777: 2, L0002: 1, S0116: 1, H0638: 1, S0358: 1, H0393: 1, S6022: 1, H0431: 1, H0586: 1, H0486: 1, H0427: 1, S0474: 1, H0327: 1, H0057: 1, H0428: 1, S0036: 1, L0351: 1, H0538: 1, L0638: 1, L0667: 1, L0653: 1, L0659: 1, L0809: 1, H0693: 1, L0438: 1, H0547: 1, S0146: 1, H0626: 1, L0746: 1, L0756: 1, L0752: 1, L0731: 1, L0758: 1,		

HPCTY12	1025231	608	68 - 1225	2783	Ala-1 to Ser-8.	S0308: 1, H0595: 1, L0596: 1 and L0599: 1.	12q12-q13	107777, 123940, 139350, 139350, 148040, 148041, 148043, 148070, 231550, 600194, 600231, 600536, 600808, 600956, 601284, 601769, 601769, 601928, 602116, 602153
						L0805: 3, H0657: 2, L0769: 2, L0766: 2, L0659: 2, L0809: 2, L0789: 2, L0665: 2, L0565: 2, H0659: 2, L0749: 2, L0777: 2, L0755: 2, L0596: 2, H0685: 1, H0583: 1, H0650: 1, H0656: 1, H0663: 1, S0420: 1, S0356: 1, H0619: 1, L0717: 1, H0586: 1, H0251: 1, H0050: 1, H0622: 1, H0135: 1, H0038: 1, H0551: 1, H0272: 1, H0561: 1, H0509: 1, L0637: 1, L0646: 1, L0794: 1, L0387: 1, L0776: 1, L0655: 1, L0657: 1, L0636: 1, L0666: 1, L0664: 1, H0520: 1, H0547: 1, H0519: 1, H0672: 1, L0593: 1, H0667: 1 and H0352: 1.		
HFASF12	1025327	609	103 - 201	2784	Pro-19 to Cys-28.	L0747: 4, L0757: 4, L0759: 4, L0770: 3, L0769: 2, L0659: 2,		

					H0691: 2, L0750: 2, S0116: 1, H0638: 1, S0300: 1, H0587: 1, L0021: 1, S0474: 1, H0529: 1, L0762: 1, L0764: 1, L0768: 1, L0775: 1, L0776: 1, L0634: 1, L0783: 1, L0663: 1, H0689: 1, H0521: 1, S0027: 1, L0748: 1, L0777: 1, L0752: 1, L0755: 1, L0731: 1, H0445: 1 and H0423: 1.			
HLIBM71	1025359	610	147 - 617	2785	Ser-26 to Ile-35.	H0556: 4, H0253: 4, H0620: 4, L0731: 3, S0212: 2, H0052: 2, H0124: 2, L0766: 2, L0809: 2, L0565: 2, S0126: 2, S0328: 2, L0603: 2, H0739: 1, S0114: 1, S0218: 1, H0657: 1, S0116: 1, H0638: 1, S0420: 1, S0045: 1, S0046: 1, S0278: 1, H0549: 1, H0550: 1, H0250: 1, H0156: 1, L0738: 1, H0327: 1, H0544: 1, L0471: 1, H0083: 1,			

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HNOKW27	1025366	611	3 - 701	2786	Phe-9 to Trp-14, Arg-125 to Asp-148, Ser-156 to Asp-163, Pro-206 to His-211.	L0439: 2, H0687: 1, L0761: 1, L0805: 1, L0438: 1 and H0670: 1.			

HPFDG48	1025526	612	461 - 303	2787		AR089: 2, AR039: 2, AR104: 2, AR053: 2, AR096: 2, AR060: 1, AR033: 1, AR061: 1, AR055: 1 L0748: 6, H0169: 1, S0428: 1, S0136: 1, L0754: 1 and L0749: 1.	Xp11.23-p11.22	300008, 300008, 300008, 300008, 300047, 300071, 300110, 300600, 301000, 301000, 301830, 309470, 309500, 309610, 309850, 311050, 312060
HVVBF24	1025712	613	49 - 1296	2788	Ser-1 to Gly-18, Trp-25 to Gly-31, Arg-46 to Ser-52, Ala-103 to Ala-108, Ser-154 to Gly-165, Gln-228 to Pro-236, Ser-284 to Gly-291, Ala-321 to Asp-327, Lys-377 to Asn-394, Asp-406 to Ser-416.	AR089: 13, AR060: 5, AR096: 5, AR104: 5, AR061: 2, AR055: 1 S0152: 12, S0356: 10, H0551: 6, H0423: 6, S0212: 5, H0090: 5, H0667: 5, S0358: 4, H0620: 4, H0622: 4, H0591: 4, L0794: 4, S0380: 4, L0731: 4, L0588: 4, S0242: 4, S0360: 3, S0474: 3, H0581: 3, S0126: 3,		

		H0436: 3, S0028: 3, L0756: 3, H0445: 3, S0192: 3, S0196: 3, H0656: 2, S0116: 2, S0442: 2, S0376: 2, S0046: 2, H0549: 2, H0098: 2, H0014: 2, S0003: 2, H0560: 2, H0641: 2, H0529: 2, L0766: 2, H0520: 2, H0519: 2, H0666: 2, L0602: 2, H0478: 2, L0740: 2, L0751: 2, L0754: 2, S0434: 2, L0595: 2, H0542: 2, H0543: 2, H0624: 1, H0170: 1, S0040: 1, S0402: 1, S0134: 1, H0341: 1, H0661: 1, H0663: 1, H0449: 1, H0638: 1, S0045: 1, S0140: 1, L0717: 1, H0411: 1, S0222: 1, H0497: 1, H0486: 1, T0040: 1, H0244: 1, H0427: 1, H0004: 1, H0596: 1, H0566: 1, L0163: 1, H0051: 1, S0051: 1, T0079: 1, H0375: 1, H0060: 1,				

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HE8UF88	1025745	614	4207 -	2789	Ala-8 to Arg-14,	H0547: 10, H0013: 9,		

			2810		Ile-64 to Thr-69, Val-94 to Asp-101, His-112 to Gln-117, Tyr-139 to Glu-145, Tyr-195 to Cys-208, Gly-216 to Gly-223, Asp-297 to Ser-307, Gly-378 to Leu-383, Ile-391 to Pro-404, Asn-451 to Ser-466.	L0758: 8, L0771: 6, L0747: 6, S0422: 5, L0770: 5, H0341: 4, S0356: 4, H0486: 4, H0251: 4, H0038: 4, H0040: 4, T0041: 4, L0766: 4, S0152: 4, L0439: 4, H0171: 3, S0360: 3, S0046: 3, H0574: 3, H0024: 3, T0042: 3, S0440: 3, H0529: 3, H0670: 3, S0330: 3, H0539: 3, L0754: 3, L0749: 3, L0779: 3, H0624: 2, S0134: 2, H0583: 2, H0657: 2, S0116: 2, S0418: 2, S0354: 2, S0045: 2, H0318: 2, T0110: 2, H0046: 2, H0266: 2, S0003: 2, H0591: 2, H0634: 2, H0412: 2, H0561: 2, L0768: 2, L0806: 2, L0664: 2, H0144: 2, L0565: 2, H0519: 2, H0659: 2, H0672: 2, S0328: 2, S0378: 2, H0521: 2, H0696: 2, H0345: 2, L0741: 2,

L0743: 2, L0748: 2, L0751: 2, L0759: 2, L0593: 2, L0595: 2, H0667: 2, H0136: 2, H0423: 2, H0556: 1, S6024: 1, H0661: 1, H0663: 1, S0444: 1, S0278: 1, H0592: 1, H0587: 1, H0497: 1, H0333: 1, H0492: 1, H0427: 1, S0280: 1, H0575: 1, S0474: 1, H0596: 1, H0546: 1, H0123: 1, H0050: 1, L0471: 1, H0373: 1, L0163: 1, H0051: 1, H0083: 1, H0687: 1, H0328: 1, H0688: 1, H0622: 1, T0006: 1, H0169: 1, H0674: 1, H0708: 1, H0598: 1, H0616: 1, H0268: 1, H0623: 1, H0100: 1, L0475: 1, S0438: 1, S0150: 1, H0646: 1, L0369: 1, L0763: 1, L0638: 1, L0646: 1, L0773: 1, L0521: 1, L0662: 1, L0794: 1, L0522: 1, L0803: 1,							

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HOUBC29	1025749	615	1558 - 1259	2790	Leu-11 to Gly-22, Ala-87 to Gly-96.	L0748: 2, L0745: 2, S0040: 1, H0637: 1, H0580: 1, H0553: 1 and L0761: 1.		
HOCPY47	1025965	616	71 - 1606	2791		L0758: 9, S0412: 8, L0749: 6, S0360: 5, H0038: 5, L0662: 5, L0751: 5, S0356: 3, H0618: 3, S0051: 3, H0616: 3, L0666: 3, L0743: 3, L0439: 3, L0731: 3, H0295: 2,		

		H0587: 2, H0135: 2, H0591: 2, L0769: 2, L0774: 2, L0775: 2, L0659: 2, L0665: 2, H0672: 2, S0330: 2, H0539: 2, H0436: 2, L0754: 2, L0588: 2, L0605: 2, H0352: 2, T0002: 1, H0381: 1, S0116: 1, H0341: 1, H0638: 1, H0339: 1, L0717: 1, H0411: 1, H0441: 1, H0586: 1, H0333: 1, H0574: 1, S0280: 1, L0021: 1, H0253: 1, S0010: 1, S0346: 1, S0049: 1, H0085: 1, L0471: 1, H0024: 1, T0010: 1, H0239: 1, H0030: 1, H0031: 1, H0181: 1, H0032: 1, H0361: 1, H0598: 1, H0090: 1, H0100: 1, H0529: 1, L0637: 1, L0772: 1, L0646: 1, L0764: 1, L0771: 1, L0648: 1, L0521: 1, L0767: 1, L0766: 1, L0375: 1, L0378: 1, L0653: 1,				

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HOVKE20	1025990	617	3 - 824	2792	Gln-52 to Thr-58, Pro-105 to Asp-111, Arg-175 to Cys-182, Leu-221 to Val-227, Thr-257 to Gly-264, Ser-266 to Glu-271.	H0618: 12, H0253: 11, L0777: 8, L0755: 8, L0794: 6, L0659: 6, L0758: 6, S0192: 5, L0743: 4, S0418: 3, L0764: 3, S3014: 3, L0744: 3, S0420: 2, S0046: 2, S0132: 2, H0333: 2, H0486: 2, H0599: 2, T0023: 2, L0774: 2, L0375: 2, H0555: 2, L0754: 2, L0749: 2, L0756: 2, L0731: 2, H0265: 1, H0295: 1, S0298: 1, S0212: 1, H0255: 1, H0661: 1, S0358: 1, H0580: 1, H0645: 1, H0549: 1, H0497: 1,		

						H0492: 1, T0040: 1, H0505: 1, H0545: 1, H0150: 1, H0086: 1, H0123: 1, H0023: 1, H0024: 1, H0014: 1, H0051: 1, H0028: 1, H0615: 1, H0688: 1, H0424: 1, H0031: 1, H0617: 1, H0059: 1, H0494: 1, H0538: 1, L0769: 1, L0637: 1, L0667: 1, L0772: 1, L0804: 1, L0806: 1, L0526: 1, L0809: 1, S0330: 1, S0454: 1, S0027: 1, S0028: 1, L0741: 1, L0740: 1, L0747: 1, L0752: 1, L0757: 1, H0665: 1, S0042: 1 and H0506: 1.	
HODGH47	1026139	618	398 - 1024	2793		H0666: 13, H0620: 7, L0731: 7, L0747: 6, L0659: 5, L0740: 5, L0750: 5, L0757: 5, S0360: 4, H0123: 4, S0022: 4, H0135: 4, L0666: 4, L0665: 4, S0028: 4, L0748: 4, L0777: 4, L0588: 4, S0420: 3, S0358: 3,	

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HODBK27	1026372	619	87 - 497	2794		H0328: 2, H0656: 1 and H0538: 1.			
HE8CH59	1026805	620	1889 - 2770	2795	Tyr-1 to Pro-8, Asp-21 to Lys-28, Arg-30 to Ile-38,	H0583: 2, L0744: 2, L0747: 2, H0650: 1, H0656: 1, S0356: 1,			

				Asn-71 to Gln-76, Val-85 to Pro-101, Ser-104 to Arg-111, His-123 to Arg-128, Glu-146 to Arg-152, Val-155 to Asp-271, Leu-274 to Gly-279, Ser-283 to Glu-290.	H0013: 1, H0590: 1, H0581: 1, H0251: 1, H0266: 1, H0328: 1, H0615: 1, H0135: 1, H0488: 1, H0538: 1, L0521: 1, H0539: 1, H0522: 1, S0028: 1, L0366: 1 and H0677: 1.		
HSKGR52	1026911	621	2 - 625	2796	Asn-53 to Arg-58, Asp-79 to Tyr-89, Pro-98 to Pro-108, Lys-195 to Lys-200.	AR052: 91, AR096: 79, AR053: 69, AR039: 64, AR089: 46, AR060: 39, AR033: 35, AR104: 32, AR055: 14, AR061: 10 L0805: 22, L0794: 15, L0766: 12, L0747: 12, L0803: 11, L0740: 11, L0779: 11, L0776: 9, L0769: 7, H0521: 7, L0439: 7, L0731: 7, L0605: 7, S0474: 6, S0422: 6, L0752: 6, L0665: 5, L0748: 5, L0758: 5, H0618: 4, S0010: 4, L0771: 4, L0789: 4, S3014: 4, H0341: 3, H0615: 3, H0708: 3, L0763: 3, L0804: 3, L0659: 3, L0809: 3, S0052: 3,		

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					H0412: 1, H0413: 1, S0038: 1, H0509: 1, H0131: 1, S0344: 1, L0598: 1, L0369: 1, L0638: 1, L0667: 1, L0662: 1, L0363: 1, L0768: 1, L0775: 1, L0375: 1, L0806: 1, L0653: 1, L0655: 1, L0666: 1, S0126: 1, H0689: 1, H0684: 1, H0660: 1, H0672: 1, S0380: 1, H0710: 1, H0522: 1, S0146: 1, S3012: 1, S0027: 1, S0028: 1, L0745: 1, L0780: 1, L0753: 1, H0445: 1, L0362: 1, L0361: 1, H0653: 1, H0423: 1 and H0506: 1.		
HMUAQ05	1026913	622	3 - 218	2797	Pro-2 to Pro-8.	S0354: 2, H0615: 2, L0591: 2, S0356: 1, S0442: 1, S0360: 1, S0222: 1, H0362: 1, H0156: 1, H0036: 1, H0012: 1, H0014: 1, S0051: 1, T0010: 1, H0529: 1, S0126: 1, L0439: 1, L0755: 1 and L0608: 1.		

HCOMA45	1026979	623	536 - 447	2798	Glu-13 to Gly-18.	H0662: 1, S0046: 1, H0658: 1 and H0670: 1.		
HE2KI45	1027007	624	3 - 1565	2799		L0803: 12, H0581: 8, S0358: 6, H0046: 6, H0428: 6, S0356: 5, S0007: 5, H0031: 4, L0665: 4, H0271: 3, H0038: 3, L0794: 3, L0804: 3, L0666: 3, H0693: 3, S0406: 3, L0756: 3, L0758: 3, L0592: 3, S0116: 2, S0444: 2, H0431: 2, H0586: 2, H0486: 2, L0471: 2, H0615: 2, H0039: 2, S0036: 2, H0616: 2, S0422: 2, H0529: 2, L0770: 2, L0521: 2, L0662: 2, L0776: 2, L0787: 2, L0438: 2, H0670: 2, H0660: 2, S0328: 2, S0330: 2, H0436: 2, L0748: 2, L0755: 2, L0485: 2, L0599: 2, S0192: 2, H0423: 2, H0624: 1, S0342: 1, S0114: 1, H0650: 1, H0657: 1, H0638: 1, S0354: 1, S0360: 1,	1	

		S0408: 1, S0410: 1, H0329: 1, S0045: 1, S0046: 1, S0278: 1, H0441: 1, H0497: 1, H0331: 1, T0109: 1, S0280: 1, H0705: 1, H0318: 1, S0474: 1, T0110: 1, H0565: 1, H0572: 1, H0050: 1, H0687: 1, S0003: 1, H0553: 1, H0488: 1, H0412: 1, T0041: 1, H0494: 1, S0438: 1, S0440: 1, S0144: 1, H0517: 1, L0763: 1, L0772: 1, L0372: 1, L0800: 1, L0764: 1, L0364: 1, L0649: 1, L0774: 1, L0523: 1, L0805: 1, L0655: 1, L0807: 1, L0527: 1, L0659: 1, L0809: 1, L0663: 1, L0664: 1, S0428: 1, S0053: 1, H0144: 1, S0374: 1, H0520: 1, H0519: 1, S0126: 1, H0682: 1, H0435: 1, H0648: 1, H0672: 1, S0378: 1, H0521: 1, S0044: 1,				

						H0478: 1, H0627: 1, H0631: 1, S0027: 1, L0740: 1, L0747: 1, L0749: 1, L0777: 1, L0752: 1, H0445: 1, S0436: 1, L0591: 1, S0196: 1, H0543: 1, S0424: 1, S0462: 1, S0446: 1 and H0506: 1.			
HODDO66	1027207	625	2 - 136	2800		H0667: 3, S0222: 2, H0013: 2, L0438: 2, H0265: 1, H0583: 1, S0280: 1, H0036: 1, H0318: 1, L0471: 1, H0266: 1, H0328: 1, H0553: 1, S0364: 1, H0038: 1, H0040: 1, H0488: 1, L0796: 1, H0144: 1, H0684: 1 and H0423: 1.	2p11.2		178640, 216900
HVVAT45	1027269	626	71 - 1117	2801	Pro-1 to Leu-8, Arg-41 to Gly-48, Ile-73 to Cys-80, Ala-137 to Tyr-144, Lys-193 to Ala-208, Leu-254 to Leu-259, Ala-317 to Ala-323, Glu-343 to Phe-349.				
HVCAG18	1027484	627	1 - 393	2802	Leu-46 to Thr-53, Pro-80 to Ser-86,	H0690: 1, H0683: 1, H0666: 1 and S0328: 1.	20q12-q13.2		118504, 118504,

					Arg-101 to Gly-112, Lys-115 to Gly-122.			131242, 139320, 139320, 139320, 139320, 600281, 600281, 602025
HPTXK72	1027486	628	52 - 462	2803	Leu-52 to Thr-59, Pro-86 to Ser-92, Arg-107 to Gly-118, Lys-121 to Gly-128.	L0751: 29, H0549: 17, H0550: 17, L0666: 9, L0747: 8, H0689: 7, H0690: 7, H0682: 7, H0615: 6, H0670: 6, H0328: 5, H0150: 4, H0660: 4, S0330: 4, S0044: 4, L0362: 4, H0597: 3, H0688: 3, L0764: 3, L0657: 3, L0809: 3, L0753: 3, L0758: 3, L0759: 3, H0431: 2, H0046: 2, T0067: 2, H0059: 2, H0647: 2, L0774: 2, L0805: 2, L0783: 2, L0438: 2, H0593: 2, H0648: 2, H0672: 2, S0328: 2, S0404: 2, L0744: 2, L0779: 2, S0436: 2, H0662: 1, S0442: 1, S0444: 1,		

					S0408: 1, S0007: 1, H0461: 1, H0085: 1, H0009: 1, S0024: 1, H0188: 1, H0039: 1, H0604: 1, H0424: 1, H0169: 1, H0674: 1, L0520: 1, L5569: 1, L0803: 1, L0804: 1, L0775: 1, L0658: 1, L0634: 1, L0542: 1, L0528: 1, L2269: 1, L0663: 1, L0665: 1, H0684: 1, H0659: 1, H0658: 1, S0380: 1, S0406: 1, H0555: 1 and L0780: 1.		253200, 600887	
						H0306: 1 and S0388: 1.5q11.1		
HHSGW78	1028405	629	150 - 404	2804				
HDTLR06	1029191	630	3 - 1013	2805		AR053: 5, AR089: 5, AR096: 4, AR039: 4, AR060: 3, AR104: 2, AR055: 2, AR033: 2, AR061: 1 L0731: 15, L0754: 14, H0616: 9, L0766: 8, L0758: 8, L0777: 7, H0266: 5, L0752: 5, S0358: 4, S0422: 4, L0518: 4, H0547: 4, S0406: 4, H0013: 3,			

		H0581: 3, H0545: 3, H0083: 3, S0003: 3, L0662: 3, L0776: 3, H0659: 3, L0439: 3, L0753: 3, S0434: 3, L0465: 3, H0171: 2, H0580: 2, H0486: 2, H0318: 2, L0471: 2, H0428: 2, H0553: 2, H0032: 2, H0038: 2, H0634: 2, H0551: 2, S0438: 2, L0764: 2, L0804: 2, L0655: 2, L0664: 2, S0374: 2, H0684: 2, H0672: 2, H0651: 2, H0518: 2, L0740: 2, L0756: 2, L0362: 2, L0603: 2, H0170: 1, H0686: 1, S0040: 1, H0583: 1, H0657: 1, S0212: 1, S0282: 1, S0420: 1, S0356: 1, S0442: 1, L0717: 1, H0411: 1, H0600: 1, H0587: 1, H0257: 1, T0039: 1, H0069: 1, S0280: 1, H0575: 1, H0036: 1, H0590: 1, L0105: 1, S0049: 1, H0570: 1,				

H0050: 1, H0014: 1, H0373: 1, S0051: 1, H0510: 1, H0328: 1, H0688: 1, H0031: 1, H0644: 1, H0040: 1, H0063: 1, H0488: 1, L0475: 1, S0440: 1, H0641: 1, H0649: 1, H0652: 1, H0529: 1, L0369: 1, L0762: 1, L0763: 1, L0767: 1, L0649: 1, L0803: 1, L0650: 1, L0806: 1, L0805: 1, L0607: 1, L0657: 1, L0783: 1, L0809: 1, L0530: 1, L0793: 1, L0666: 1, L0665: 1, S0148: 1, S0126: 1, H0683: 1, H0658: 1, H0670: 1, H0660: 1, S0380: 1, S0152: 1, S0454: 1, H0521: 1, H0696: 1, S0188: 1, S0392: 1, H0626: 1, S0390: 1, L0759: 1, H0444: 1, S0308: 1, S0026: 1, H0667: 1, S0194: 1, H0542: 1, H0543: 1, S0412: 1 and H0506: 1.							

HPAMG11	1029484	631	1328 - 663	2806	Pro-32 to Lys-38, Ser-201 to Pro-211, Glu-217 to Glu-222.	H0413: 2, H0556: 1, H0638: 1, S0376: 1, H0457: 1, H0009: 1, H0519: 1, H0682: 1, H0672: 1, L0748: 1, L0759: 1 and H0445: 1.		
HSDJR27	1030870	632	1758 - 622	2807	Gln-8 to Arg-27, Val-34 to Asn-39, Tyr-65 to Gly-75, Glu-80 to Lys-87, Thr-207 to Gly-218, Thr-245 to Gln-250, Leu-256 to Thr-263, Leu-273 to Thr-281, Lys-289 to Leu-296, Ser-323 to Asn-330.	L0665: 3, L0777: 3, L0717: 2, L0776: 2, L0438: 2, L0756: 2, L0752: 2, S0116: 1, H0661: 1, H0339: 1, H0549: 1, H0587: 1, H0688: 1, H0553: 1, L0351: 1, S0422: 1, L0437: 1, L0769: 1, L0637: 1, L0771: 1, L0662: 1, L0794: 1, L0766: 1, L0655: 1, L0787: 1, L0789: 1, L0664: 1, L0352: 1, H0659: 1, L0748: 1, L0754: 1, L0779: 1, L0731: 1, L0758: 1, S0260: 1, L0480: 1, L0596: 1 and L0608: 1.		
HOCPL33	1030871	633	1032 - 571	2808	Asp-1 to Gly-6, Pro-14 to Trp-35, Arg-37 to Gly-45, Ser-63 to Pro-72, Pro-87 to Arg-100,	L0770: 4, L0439: 4, L0438: 3, H0670: 3, L0748: 3, L0740: 3, H0538: 2, L0777: 2, S0342: 1, S0110: 1,		

					Pro-102 to Gly-107.	S0354: 1, S0444: 1, S0360: 1, H0729: 1, H0728: 1, H0734: 1, H0619: 1, H0549: 1, H0550: 1, H0587: 1, H0427: 1, H0253: 1, H0023: 1, T0010: 1, H0039: 1, H0674: 1, H0135: 1, H0488: 1, H0494: 1, S0015: 1, H0647: 1, S0210: 1, L0763: 1, L0800: 1, L0644: 1, L0521: 1, L0768: 1, L0775: 1, L0805: 1, L0659: 1, L0782: 1, L0783: 1, L0528: 1, L0789: 1, L0791: 1, L0793: 1, L0532: 1, H0725: 1, H0659: 1, H0658: 1, H0660: 1, S0013: 1, S0037: 1, S0206: 1, L0751: 1, L0605: 1, L0485: 1, L0599: 1 and S0026: 1.	
HPCQN80	1030963	634	86 - 2158	2809		L0803: 4, L0777: 4, L0758: 4, L0804: 3, L0659: 3, L0752: 3, S0408: 2, L0717: 2, L0598: 2, L0770: 2,	

HODEJ22	1031076	635	1561 -	2810		L0766: 6, L0804: 5,	
					L0591: 1, L0581: 1 and H0506: 1.		
					L0745: 1, L0750: 1, L0756: 1, L0757: 1,		
					H0521: 1, H0555: 1, S0032: 1, L0740: 1,		
					L0788: 1, L0666: 1,		
					L0653: 1, L0776: 1, L0809: 1, L0530: 1,		
					L0375: 1, L0806: 1,		
					L0773: 1, L0649: 1, L0381: 1, L0774: 1,		
					L0637: 1, L5566: 1, L0800: 1, L0764: 1,		
					H0673: 1, S0438: 1, S0144: 1, L0520: 1, L0763: 1, L0371: 1,		
					H0393: 1, H0351: 1, H0441: 1, H0486: 1, H0581: 1, H0123: 1, H0050: 1, S0051: 1,		
					L0751: 2, L0749: 2, L0779: 2, S0040: 1, H0713: 1, S0356: 1, S0442: 1, S0360: 1,		
					L0662: 2, L0661: 2, L0657: 2, L0526: 2, L0664: 2, H0659: 2, H0648: 2, L0748: 2,		

			1307			L0748: 5, L0666: 4, L0663: 4, L0634: 3, L0740: 3, H0445: 3, H0318: 2, H0046: 2, H0615: 2, H0428: 2, L0761: 2, L0775: 2, L0665: 2, H0658: 2, H0583: 1, H0656: 1, S0001: 1, H0637: 1, H0090: 1, H0038: 1, S0002: 1, L0520: 1, L0638: 1, L0649: 1, L0527: 1, L0657: 1, L0559: 1, L0647: 1, L0664: 1, S0052: 1, S0428: 1, H0682: 1, H0660: 1, H0555: 1 and L0751: 1.		
HODFZ16	1031085	636	340 - 498	2811	Phe-3 to Ala-23.	L0766: 2, L0748: 2, S0116: 1, L0005: 1, H0615: 1, H0529: 1, L0792: 1 and H0521: 1.		
HWGAE28	1031316	637	1 - 2271	2812	Cys-1 to Arg-6, Thr-84 to Thr-97, Arg-131 to Trp-136, Ser-155 to Gly-160, Thr-187 to Glu-201.	L0439: 9, H0519: 6, L0665: 5, H0547: 5, L0755: 5, S0434: 5, H0529: 4, L0659: 4, S0358: 3, S0010: 3, L0731: 3, L0599: 3, L0595: 3, H0422: 3, H0657: 2, H0581: 2,	2p24	107730, 107730, 107730, 107730, 182601, 602134

		H0251: 2, L0471: 2, H0510: 2, H0031: 2, L0763: 2, L0646: 2, L0662: 2, L0775: 2, L0809: 2, L0647: 2, H0436: 2, L0754: 2, L0758: 2, L0759: 2, L0605: 2, S0424: 2, H0624: 1, L0615: 1, H0341: 1, H0662: 1, S0418: 1, L0005: 1, S0360: 1, S0410: 1, S0046: 1, H0415: 1, H0600: 1, H0587: 1, H0642: 1, H0486: 1, H0250: 1, H0156: 1, H0546: 1, H0041: 1, S6028: 1, H0266: 1, S0334: 1, S0250: 1, T0006: 1, L0455: 1, H0708: 1, H0551: 1, H0059: 1, H0100: 1, L0370: 1, H0429: 1, H0494: 1, S0352: 1, S0370: 1, S0150: 1, H0641: 1, L0369: 1, L0520: 1, L0770: 1, L0638: 1, L0772: 1, L0641: 1, L0521: 1, L0794: 1, L0803: 1,				

						L0804: 1, L0650: 1, L0654: 1, L0661: 1, L0656: 1, L0526: 1, L0790: 1, L0666: 1, L0565: 1, H0520: 1, H0690: 1, H0435: 1, H0659: 1, H0670: 1, H0660: 1, H0696: 1, H0704: 1, S0406: 1, H0555: 1, S3014: 1, S0028: 1, L0740: 1, L0779: 1, L0777: 1, L0780: 1, L0592: 1, L0608: 1, L0362: 1, H0665: 1, S0194: 1, H0542: 1, H0423: 1 and L0465: 1.	9p13-p12	230400, 250250
HOFNZ21	1031328	638	109 - 456	2813	Arg-1 to Gly-6.	H0415: 2	9p13-p12	230400, 250250
HOOKH25	1031329	639	231 - 2696	2814	Ala-4 to Glu-13, Ala-21 to Asp-27, Lys-34 to Asn-40, Asp-91 to Ile-98, Pro-122 to Lys-128, Arg-160 to Gly-165, Glu-203 to Ser-213, Gly-218 to Cys-225, Ser-298 to Lys-304, Glu-307 to Asn-312, Pro-327 to His-333,	L0747: 8, L0659: 7, L0776: 5, L0770: 4, L0662: 4, L0768: 4, L0775: 4, L0752: 4, L0603: 4, H0556: 3, S0410: 3, L0665: 3, L0439: 3, L0750: 3, S0356: 2, S0408: 2, L0471: 2, H0271: 2, S0440: 2, L0762: 2, L0769: 2, L0372: 2,	9p13-p12	230400, 250250

					Thr-363 to Ser-368, Arg-375 to Val-383, Asp-500 to Leu-505, Arg-602 to Asp-608, Glu-722 to Ser-734, Glu-739 to Val-744, Glu-746 to His-751, Leu-778 to Phe-784, Pro-790 to Gly-795, Ala-797 to Thr-807, Tyr-812 to Tyr-821.	L0646: 2, L0764: 2, L0773: 2, L0766: 2, L0649: 2, L0655: 2, L0663: 2, L0664: 2, H0144: 2, L0565: 2, H0547: 2, H0690: 2, H0659: 2, L0602: 2, S0404: 2, L0754: 2, L0749: 2, L0777: 2, L0758: 2, L0596: 2, H0657: 1, S0001: 1, H0484: 1, H0638: 1, S0418: 1, S0444: 1, L0717: 1, H0333: 1, H0156: 1, H0052: 1, H0545: 1, H0012: 1, H0083: 1, H0687: 1, H0674: 1, H0090: 1, H0063: 1, H0264: 1, H0100: 1, L0434: 1, L0351: 1, H0494: 1, H0561: 1, S0466: 1, H0641: 1, H0529: 1, L0763: 1, L0761: 1, L0667: 1, L0363: 1, L0650: 1, L0653: 1, L0654: 1, L0379: 1, L0607: 1, L0807: 1, L0635: 1, L0783: 1, L0383: 1, L0809: 1,

						L0666: 1, H0658: 1, H0670: 1, H0648: 1, H0521: 1, S0406: 1, L0748: 1, L0731: 1, L0593: 1, L0595: 1, S0026: 1, S0276: 1 and H0422: 1.		
HDTIL75	1031435	640	1 - 1092	2815	Gly-1 to Arg-6, Glu-26 to Gly-31, Gln-70 to Trp-75.	S0410: 8, H0620: 5, H0012: 2, S0040: 1, S0358: 1, S0132: 1, H0486: 1, H0706: 1, H0031: 1, H0628: 1, H0316: 1, S0036: 1, H0090: 1, H0038: 1, H0131: 1, S0144: 1, L0774: 1, L0789: 1, L0666: 1, H0144: 1, L0438: 1, H0435: 1, H0672: 1, S0328: 1, H0539: 1, L0731: 1, S0436: 1 and H0665: 1.		
HPRSB55	1031451	641	3 - 1751	2816	Cys-18 to Lys-24, Gly-57 to Gly-63, Lys-72 to Ile-81, Cys-88 to Glu-93, Gly-97 to Glu-116, Thr-121 to Val-129, Lys-137 to Lys-150, Thr-156 to Asp-161, Gly-177 to Leu-182,	L0766: 4, L0758: 4, L0773: 3, L0748: 3, L0751: 3, L0731: 3, L0759: 3, H0171: 2, H0013: 2, H0644: 2, H0616: 2, H0633: 2, L0805: 2, L0659: 2, L0666: 2, L0665: 2, L0754: 2, L0779: 2,		

					Glu-213 to Leu-229, Asp-275 to Arg-281, Asp-287 to Trp-299, Lys-302 to Arg-316, Leu-338 to Ser-343.	S6024: 1, S0212: 1, S0354: 1, S0046: 1, T0039: 1, H0599: 1, H0575: 1, H0036: 1, T0110: 1, H0046: 1, H0050: 1, L0471: 1, H0355: 1, H0271: 1, H0687: 1, H0553: 1, H0166: 1, H0212: 1, H0211: 1, H0264: 1, H0272: 1, H0100: 1, H0494: 1, S0002: 1, L0637: 1, L0627: 1, L0645: 1, L0764: 1, L0803: 1, L0774: 1, L0653: 1, L0606: 1, L0790: 1, L0664: 1, H0435: 1, H0660: 1, H0648: 1, H0521: 1, L0439: 1, L0747: 1, L0749: 1, L0750: 1, L0752: 1 and L0596: 1.	12	
HPDPY36	1031606	642	482 - 757	2817	Pro-33 to Pro-40, Pro-47 to Met-56.	L0471: 1, H0617: 1, L0761: 1, L0768: 1, H0658: 1, L0754: 1 and L0779: 1.		
HETFJ47	1031922	643	3 - 1328	2818		AR060: 4, AR089: 2, AR061: 1, AR096: 1, AR033: 0, AR039: 0, AR053: 0, AR052: 0		

		L0596: 7, H0622: 5, L0747: 5, H0046: 4, L0372: 4, L0764: 3, L0662: 3, L0657: 3, L0783: 3, L0663: 3, L0752: 3, H0662: 2, S0356: 2, H0040: 2, H0538: 2, L0646: 2, L0771: 2, L0774: 2, L0805: 2, L0809: 2, L0666: 2, L0665: 2, H0435: 2, H0672: 2, L0748: 2, L0751: 2, L0777: 2, L0608: 2, H0624: 1, H0686: 1, H0295: 1, H0241: 1, S0418: 1, S0358: 1, S0376: 1, S0360: 1, S0132: 1, H0642: 1, H0590: 1, H0150: 1, H0620: 1, H0023: 1, H0356: 1, H0424: 1, H0213: 1, H0617: 1, H0169: 1, H0634: 1, H0063: 1, T0067: 1, H0488: 1, H0334: 1, S0370: 1, S0440: 1, H0652: 1, L0645: 1, L0773: 1, L0648: 1, L0806: 1, L0776: 1,				

					L0541: 1, L0789: 1, L0790: 1, L0664: 1, S0374: 1, H0689: 1, H0666: 1, H0478: 1, L0779: 1, S0436: 1, H0506: 1 and H0712: 1.		
HMAMI21	1031988	644	14 - 1222	2819	AR096: 10, AR089: 10, AR060: 7, AR104: 6, AR033: 5, AR053: 5, AR039: 4, AR061: 3, AR055: 3 L0803: 9, H0648: 5, H0046: 3, L0805: 3, L0731: 3, S0444: 2, S0360: 2, S0476: 2, H0597: 2, H0412: 2, L0764: 2, L0809: 2, H0670: 2, L0740: 2, L0747: 2, L0756: 2, L0777: 2, S0040: 1, T0049: 1, S0420: 1, S0358: 1, S0376: 1, H0580: 1, L0152: 1, S0045: 1, S0278: 1, H0261: 1, S0280: 1, H0618: 1, H0012: 1, H0266: 1, H0488: 1, H0268: 1, S0144: 1, S0344: 1, S0426: 1, L0638: 1, L0646: 1,		

					L0794: 1, L0804: 1, L0774: 1, L0666: 1, L0664: 1, L0665: 1, S0052: 1, S0374: 1, H0658: 1, H0651: 1, S0028: 1, L0779: 1, L0780: 1, L0755: 1, L0759: 1, H0445: 1 and S0276: 1.		
HCOQQ85	1032475	645	343 - 672	2820	Arg-37 to Ser-44, Leu-68 to Lys-73, Val-77 to Lys-84, Glu-98 to Lys-110.	L0775: 9, S0126: 9, L0747: 9, H0617: 7, L0750: 7, L0731: 7, H0670: 5, L0740: 5, L0770: 4, L0769: 4, L0768: 4, L0783: 4, L0752: 4, T0023: 3, L0764: 3, L0653: 3, L0776: 3, H0672: 3, S0046: 2, T0039: 2, H0318: 2, H0251: 2, H0545: 2, H0012: 2, H0373: 2, S0388: 2, H0266: 2, H0087: 2, H0100: 2, H0280: 2, L0368: 2, L0753: 2, L0755: 2, L0757: 2, H0595: 2, L0590: 2, L0592: 2, S6024: 1, H0255: 1, H0664: 1, H0177: 1, S0360: 1,	1q21	104770, 107670, 110700, 135940, 145001, 146790, 152445, 152445, 159001, 174000, 179755, 182860, 182860, 182860, 191315, 230800, 230800, 266200, 600897, 601105, 601412,

					S0408: 1, H0411: 1, H0298: 1, L0622: 1, T0040: 1, L0021: 1, S0049: 1, H0052: 1, H0263: 1, H0597: 1, H0620: 1, T0003: 1, L0163: 1, H0594: 1, H0252: 1, H0606: 1, H0163: 1, S0464: 1, S0438: 1, H0652: 1, L0598: 1, L0763: 1, L0773: 1, L0375: 1, L0629: 1, L0628: 1, L0659: 1, L0518: 1, L0545: 1, L0541: 1, L0788: 1, L0665: 1, H0144: 1, H0691: 1, H0682: 1, H0658: 1, H0660: 1, H0648: 1, S0330: 1, S0380: 1, S0027: 1, L0748: 1, L0754: 1, L0756: 1, L0780: 1, L0758: 1, L0759: 1, L0462: 1 and H0352: 1.		601652, 602491
HE2DQ62	1033653	646	1515 - 796	2821	Arg-1 to Ala-7, Glu-98 to Asp-103, Glu-109 to Asp-115, Leu-141 to Glu-146, Glu-172 to Arg-180.	H0545: 3, H0046: 3, L0763: 3, L0783: 3, S0358: 2, L0769: 2, L0774: 2, L0809: 2, H0547: 2, S0126: 2,		

						H0660: 2, H0672: 2, S0031: 2, L0588: 2, H0624: 1, H0170: 1, H0265: 1, H0556: 1, H0295: 1, H0583: 1, H0657: 1, H0662: 1, S0356: 1, S0354: 1, S0360: 1, H0637: 1, S0046: 1, L0717: 1, H0550: 1, H0013: 1, H0086: 1, H0011: 1, H0510: 1, H0494: 1, H0646: 1, H0529: 1, L0502: 1, L0770: 1, L0638: 1, L0761: 1, L0521: 1, L0528: 1, L0666: 1, L0665: 1, H0144: 1, S0374: 1, H0519: 1, H0659: 1, S0380: 1, H0704: 1, S0028: 1, L0747: 1, L0779: 1, L0777: 1, H0653: 1, S0194: 1 and S0276: 1.		
HEBAE89	1034320	647	179 - 400	2822	Pro-20 to Phe-32, Pro-52 to Phe-59, Lys-68 to His-74.	S0007: 5, S0010: 1, H0617: 1 and L0769: 1.		
HKDBF43	1034471	648	3 - 431	2823	Pro-2 to Asp-14, Ser-71 to Thr-76, Ser-110 to Trp-119.	AR089: 31, AR053: 27, AR096: 26, AR052: 25, AR039: 16, AR060:		

					15, AR033: 13, AR104: 13, AR055: 6, AR061: 4 L0749: 4, L0471: 3, L0748: 3, L0777: 3, H0545: 2, H0561: 2, L0770: 2, L0769: 2, L0745: 2, L0779: 2, L0752: 2, L0759: 2, H0657: 1, H0663: 1, H0125: 1, S0358: 1, H0393: 1, H0411: 1, L0586: 1, H0013: 1, H0156: 1, H0083: 1, H0356: 1, H0328: 1, H0321: 1, H0551: 1, S0422: 1, L0764: 1, L0773: 1, L0804: 1, L0774: 1, L0776: 1, L0659: 1, H0547: 1, H0519: 1, H0683: 1, H0659: 1, H0648: 1, H0672: 1, S0330: 1, S3014: 1, L0731: 1, S0031: 1 and H0352: 1.		
HVVCT43	1034539	649	3152 - 2838	2824		L0666: 47, H0046: 20, H0672: 13, L0754: 11, S0003: 9, L0766: 6, L0664: 6, L0744: 5, L0439: 5, L0777: 5,	

L0663: 4, H0658: 4, L0599: 4, S0214: 3, L0637: 3, L0521: 3, L0804: 3, L0438: 3, H0435: 3, L0752: 3, S0408: 2, S0046: 2, H0497: 2, H0590: 2, H0050: 2, H0644: 2, H0264: 2, T0041: 2, S0002: 2, S0426: 2, L0770: 2, L0794: 2, L0775: 2, L0665: 2, H0547: 2, S0126: 2, H0659: 2, S0152: 2, H0478: 2, L0786: 2, L0779: 2, L0731: 2, L0759: 2, L0608: 2, H0423: 2, H0624: 1, H0556: 1, H0686: 1, S0342: 1, S0114: 1, S0132: 1, H0645: 1, S0222: 1, H0601: 1, H0270: 1, T0114: 1, H0013: 1, L0021: 1, H0599: 1, H0575: 1, H0318: 1, L0738: 1, H0327: 1, H0014: 1, H0373: 1, S0051: 1, H0021: 1, H0316: 1, H0040: 1, H0616: 1,								

					H0100: 1, H0625: 1, H0561: 1, S0440: 1, H0641: 1, S0144: 1, S0142: 1, L0598: 1, H0529: 1, L0369: 1, L0769: 1, L0646: 1, L0771: 1, L0662: 1, L0803: 1, L0774: 1, L0651: 1, L0805: 1, L0776: 1, L0659: 1, L0783: 1, L0791: 1, L0792: 1, H0519: 1, H0684: 1, H0670: 1, H0660: 1, H0648: 1, S0328: 1, H0518: 1, H0521: 1, H0522: 1, H0696: 1, H0555: 1, H0436: 1, L0758: 1, H0445: 1, L0684: 1, H0595: 1, L0588: 1, S0026: 1, H0543: 1, H0422: 1 and H0506: 1.		
HTTDR30	1035435	650	609 - 1022	2825	Val-39 to Ala-45.	AR055: 8, AR060: 6, AR052: 6, AR089: 5, AR096: 5, AR053: 5, AR033: 4, AR061: 3, AR104: 2, AR039: 2 L0766: 7, H0591: 3, H0040: 3, L0794: 3, H0689: 3, L0752: 3,		

						H0581: 2, H0059: 2, L0771: 2, L0809: 2, L0665: 2, L0749: 2, H0637: 1, H0497: 1, T0109: 1, H0036: 1, H0318: 1, H0039: 1, H0181: 1, H0038: 1, H0634: 1, L0637: 1, L0662: 1, L0649: 1, L0388: 1, L0776: 1, L0655: 1, L0658: 1, L0788: 1, H0520: 1, H0690: 1, H0670: 1, H0672: 1, L0751: 1, L0747: 1, L0750: 1, L0777: 1, L0758: 1 and L0361: 1.		
HODGO46	1035602	651	420 - 316	2826	Thr-11 to Asn-18, Gly-25 to Glu-30.	H0615: 2		
HNTTB23	1035988	652	3 - 974	2827	Pro-21 to Asn-31, Arg-158 to Lys-170, Thr-194 to Leu-200.	AR039: 2, AR096: 1, AR089: 1, AR060: 1, AR033: 1, AR061: 1, AR055: 0, AR053: 0 L0757: 3, L0594: 2, S0212: 1, L0527: 1, H0547: 1, S0328: 1 and L0756: 1.		
HVVBV73	1036583	653	334 - 1299	2828	His-55 to Arg-63, Glu-96 to Val-109, Ser-113 to Ala-119,	S0278: 5, H0580: 2, H0575: 2, H0050: 2, S0344: 2, L0764: 2,		

					Lys-140 to Tyr-150, Glu-157 to Ser-172, Gly-174 to Asn-185, Arg-223 to Pro-245, Leu-264 to Asp-272.	H0672: 2, T0002: 1, S0134: 1, H0656: 1, S0116: 1, H0706: 1, S0010: 1, H0581: 1, H0375: 1, H0030: 1, H0031: 1, H0644: 1, H0090: 1, H0087: 1, T0041: 1, S0142: 1, S0002: 1, S0426: 1, L0770: 1, L0667: 1, L0794: 1, L0803: 1, L0543: 1, H0521: 1, L0748: 1, L0749: 1, S0260: 1 and H0542: 1.		
HE8MH38	1036707	654	1 - 1812	2829		H0013: 2 and S0126: 1.		
HTEPV42	1036973	655	1 - 435	2830	Gln-1 to Asp-6, Gly-11 to Ser-16, Pro-21 to Leu-41, Ser-44 to Pro-54.	L0754: 6, L0758: 6, L0598: 3, L0756: 3, H0716: 2, S0358: 2, S0360: 2, S0007: 2, H0318: 2, H0052: 2, L0471: 2, H0615: 2, L0794: 2, L0766: 2, L0663: 2, H0658: 2, L0750: 2, L0731: 2, H0664: 1, H0638: 1, S0442: 1, H0741: 1, H0734: 1, H0229: 1, H0411: 1, H0415: 1, H0497: 1, H0574: 1, H0599: 1, H0108: 1,		

					S0010: 1, S0474: 1, H0581: 1, H0050: 1, S0214: 1, H0030: 1, H0032: 1, H0113: 1, H0616: 1, T0067: 1, H0488: 1, H0059: 1, S0438: 1, H0538: 1, L0803: 1, L0805: 1, L0776: 1, L0655: 1, L0659: 1, L0809: 1, L5623: 1, L0788: 1, L0791: 1, L0793: 1, L0666: 1, H0520: 1, H0519: 1, H0684: 1, H0670: 1, H0521: 1, L0747: 1, L0749: 1, L0752: 1, L0759: 1, S0434: 1, L0596: 1, L0592: 1, L0362: 1 and H0423: 1.	
HFTCG52	1037108	656	706 - 89	2831	Val-10 to Lys-17, Val-137 to Gly-142, Pro-148 to Tyr-167.	AR061: 28, AR033: 25, AR104: 22, AR055: 22, AR060: 19, AR089: 19, AR052: 12, AR039: 11, AR096: 11, AR053: 8 L0751: 7, L0769: 6, L0750: 5, L0752: 5, H0052: 4, L0771: 4, L0775: 4, L0758: 4,	

		H0556: 3, L0665: 3, H0486: 2, S0010: 2, H0620: 2, T0006: 2, H0181: 2, H0494: 2, L0774: 2, L0375: 2, L0776: 2, L0512: 2, L0659: 2, H0555: 2, S0206: 2, L0740: 2, L0747: 2, L0596: 2, L0588: 2, S0276: 2, H0624: 1, S0402: 1, T0049: 1, H0341: 1, H0662: 1, S0358: 1, S0376: 1, S0360: 1, S0045: 1, S0476: 1, L0717: 1, H0351: 1, S0222: 1, H0455: 1, T0114: 1, L0021: 1, H0618: 1, T0048: 1, H0318: 1, L0109: 1, H0309: 1, H0544: 1, H0546: 1, H0545: 1, H0009: 1, H0123: 1, L0471: 1, H0424: 1, H0031: 1, H0628: 1, H0617: 1, H0063: 1, H0059: 1, H0100: 1, H0625: 1, H0633: 1, H0646: 1, H0517: 1, L0770: 1, L0764: 1,			

						L0766: 1, L0655: 1, L0657: 1, L0526: 1, L0783: 1, L0809: 1, L0544: 1, L0529: 1, L0664: 1, S0428: 1, H0593: 1, S0126: 1, H0682: 1, H0659: 1, H0670: 1, H0648: 1, L0611: 1, S0432: 1, L0756: 1, L0757: 1, S0436: 1 and S0194: 1.		
HKAOB40	1037131	657	1 - 360	2832	Asp-64 to Phe-69, Thr-104 to Phe-120.	AR052: 26, AR033: 22, AR104: 15, AR053: 14, AR060: 12, AR055: 12, AR089: 11, AR096: 8, AR061: 4, AR039: 2 H0360: 14, S0408: 5, L0774: 5, L0749: 5, L0775: 4, H0648: 4, L0623: 3, H0373: 3, L0520: 3, S0328: 3, S0406: 3, S0360: 2, S0222: 2, H0575: 2, T0082: 2, L0471: 2, H0494: 2, L0763: 2, L0769: 2, L0764: 2, L0517: 2, L0809: 2, H0684: 2, L0747: 2, S0031: 2, L0581: 2,		

		H0171: 1, T0002: 1, H0685: 1, T0049: 1, H0657: 1, S0116: 1, L0481: 1, H0638: 1, S0358: 1, S0444: 1, S0410: 1, H0580: 1, H0722: 1, S0045: 1, S0046: 1, S0132: 1, H0393: 1, T0060: 1, H0156: 1, H0230: 1, H0320: 1, H0014: 1, L0163: 1, S0051: 1, H0615: 1, S0036: 1, H0412: 1, H0202: 1, H0560: 1, S0438: 1, S0440: 1, S0144: 1, L0772: 1, L0521: 1, L0662: 1, L0767: 1, L0768: 1, L5574: 1, L0522: 1, L0659: 1, L0526: 1, L0782: 1, L0788: 1, H0689: 1, H0690: 1, H0658: 1, H0670: 1, H0672: 1, S0378: 1, S0404: 1, S0028: 1, L0779: 1, L0757: 1, L0758: 1, L0759: 1, S0434: 1, L0589: 1, S0192: 1, H0422: 1 and S0424: 1.			

HPDVE37	1037303	658	34 - 885	2833	His-8 to Gly-18, Phe-25 to Ala-39, Val-70 to Ser-75, Gln-114 to Gly-121, Thr-146 to Lys-155, Gly-213 to Asn-219, Glu-256 to Asp-267.	H0521: 68, H0090: 12, L0666: 10, L0748: 10, L0775: 9, H0522: 9, H0638: 8, L0771: 8, L0659: 8, H0591: 7, L0747: 7, L0770: 5, L0664: 5, L0754: 5, H0580: 4, H0486: 4, H0622: 4, H0644: 4, H0551: 4, H0494: 4, L0655: 4, S0374: 4, L0755: 4, L0759: 4, S0132: 3, H0013: 3, H0421: 3, H0553: 3, H0616: 3, H0641: 3, S0142: 3, L0766: 3, L0663: 3, L0665: 3, H0547: 3, L0756: 3, L0779: 3, L0752: 3, S0358: 2, S0376: 2, S0444: 2, S0360: 2, S0278: 2, H0431: 2, H0586: 2, H0575: 2, H0318: 2, H0581: 2, H0457: 2, S0003: 2, H0688: 2, H0039: 2, H0264: 2, H0529: 2, L0763: 2, L0769: 2, L0646: 2, L0803: 2, L0774: 2, H0701: 2,		

		S0380: 2, H0555: 2, L0439: 2, L0740: 2, L0777: 2, L0731: 2, H0445: 2, L0599: 2, L0608: 2, H0506: 2, S0040: 1, H0650: 1, S0116: 1, S0212: 1, S0356: 1, S0354: 1, S0468: 1, S0045: 1, H0619: 1, S6022: 1, H0370: 1, H0392: 1, H0497: 1, H0642: 1, T0114: 1, H0427: 1, H0042: 1, H0251: 1, H0596: 1, H0046: 1, H0086: 1, H0057: 1, H0083: 1, H0375: 1, T0023: 1, H0031: 1, L0055: 1, H0598: 1, H0135: 1, H0038: 1, H0040: 1, H0412: 1, H0056: 1, T0042: 1, S0370: 1, H0509: 1, S0144: 1, S0002: 1, S0426: 1, L0796: 1, L0772: 1, L0764: 1, L0765: 1, L0662: 1, L0768: 1, L0389: 1, L0804: 1, L0651: 1, L0636: 1, L0647: 1,			

					L0791: 1, H0702: 1, H0693: 1, H0593: 1, S0122: 1, H0689: 1, H0659: 1, H0658: 1, S0328: 1, H0539: 1, S0152: 1, H0479: 1, S3012: 1, S0027: 1, S0206: 1, L0744: 1, L0749: 1, L0757: 1, S0031: 1, H0707: 1, L0597: 1, L0605: 1, H0667: 1, S0242: 1, H0543: 1, H0423: 1, H0677: 1 and H0352: 1.		
HTLES74	1037438	659	95 - 859	2834	H0618: 3, L0740: 2, L0749: 2, L0596: 2, L0597: 2, S0354: 1, H0580: 1, H0042: 1, H0253: 1, S0010: 1, H0172: 1, H0615: 1, H0412: 1, S0386: 1, L0648: 1, L0662: 1, L0768: 1, L0803: 1, L0774: 1, L0657: 1, L0809: 1, L0779: 1, L0758: 1 and H0445: 1.		
HCORG51	1037480	660	3 - 434	2835	Cys-1 to Glu-6, Asp-52 to Asp-65, Lys-82 to Pro-88, Phe-111 to Ala-123.	S0136: 33, L0747: 16, H0144: 14, L0731: 14, L0752: 13, S0422: 12, L0740: 12, L0754: 11,	

		L0750: 11, H0038: 10, S0026: 10, H0556: 9, S0360: 9, L0665: 9, H0521: 9, H0616: 8, L0520: 8, L0776: 8, L0664: 8, L0757: 8, H0009: 7, S0003: 7, L0655: 7, S0406: 7, L0748: 7, H0170: 6, L0471: 6, H0620: 6, S0440: 6, L0518: 6, L0749: 6, L0608: 6, H0341: 5, S0442: 5, H0351: 5, H0370: 5, H0013: 5, H0090: 5, H0551: 5, L0598: 5, L0375: 5, L0659: 5, S0126: 5, H0682: 5, H0648: 5, L0751: 5, H0543: 5, H0423: 5, L0005: 4, S0444: 4, S0007: 4, H0163: 4, H0494: 4, H0529: 4, L0769: 4, L0521: 4, L0775: 4, L0666: 4, H0659: 4, H0670: 4, S0027: 4, L0758: 4, H0542: 4, H0657: 3, S0212: 3, S0354: 3, S0408: 3, H0580: 3,			

		S0476: 3, S0278: 3, S0222: 3, H0486: 3, H0687: 3, H0674: 3, S0448: 3, L0646: 3, L0662: 3, L0649: 3, L0774: 3, L0657: 3, S0374: 3, H0547: 3, S0328: 3, S3014: 3, H0444: 3, H0171: 2, H0265: 2, T0002: 2, S0040: 2, H0716: 2, H0295: 2, T0049: 2, S0218: 2, H0656: 2, S0116: 2, H0638: 2, S0418: 2, S0420: 2, S0358: 2, S0045: 2, H0369: 2, H0431: 2, H0415: 2, H0592: 2, H0586: 2, H0574: 2, T0109: 2, H0250: 2, S0280: 2, S0010: 2, H0052: 2, H0050: 2, H0012: 2, H0051: 2, S0051: 2, H0266: 2, H0288: 2, S0214: 2, H0252: 2, H0428: 2, H0039: 2, H0673: 2, H0135: 2, H0063: 2, H0412: 2, H0623: 2, S0150: 2, H0207: 2,				

		H0641: 2, S0142: 2, S0344: 2, L0770: 2, L0771: 2, L0766: 2, L0558: 2, L0519: 2, H0520: 2, H0684: 2, H0435: 2, H0710: 2, H0696: 2, H0704: 2, H0134: 2, H0436: 2, S0028: 2, L0756: 2, L0753: 2, H0445: 2, S0434: 2, L0588: 2, H0422: 2, S0470: 1, H0686: 1, H0685: 1, S0342: 1, H0294: 1, S0114: 1, S0134: 1, H0583: 1, H0484: 1, H0663: 1, H0241: 1, H0176: 1, S0356: 1, T0008: 1, H0637: 1, H0152: 1, S0046: 1, H0619: 1, H0645: 1, H0411: 1, H0438: 1, H0600: 1, H0497: 1, H0642: 1, H0331: 1, T0039: 1, H0635: 1, H0427: 1, H0156: 1, H0097: 1, H0575: 1, H0706: 1, H0390: 1, H0581: 1, H0421: 1, H0434: 1, H0196: 1,				

		H0309: 1, H0596: 1, L0040: 1, H0597: 1, H0327: 1, H0530: 1, H0544: 1, H0545: 1, H0046: 1, N0006: 1, H0570: 1, H0569: 1, H0172: 1, H0123: 1, H0010: 1, H0373: 1, H0083: 1, H0510: 1, H0099: 1, H0267: 1, H0290: 1, H0328: 1, H0535: 1, H0622: 1, L0483: 1, T0006: 1, H0316: 1, H0591: 1, H0040: 1, H0634: 1, H0413: 1, H0100: 1, T0041: 1, H0334: 1, H0560: 1, H0625: 1, S0438: 1, H0647: 1, S0144: 1, H0538: 1, UNKWN: 1, L0369: 1, L0762: 1, L0637: 1, L0761: 1, L0373: 1, L0764: 1, L0773: 1, L0648: 1, L0626: 1, L0767: 1, L0794: 1, L0386: 1, L0378: 1, L0805: 1, L0629: 1, L0383: 1, L0382: 1, L0809: 1, L0530: 1,				

					L0789: 1, L0663: 1, S0428: 1, H0701: 1, L0565: 1, H0519: 1, H0593: 1, H0689: 1, H0658: 1, H0672: 1, S0330: 1, H0539: 1, S0378: 1, S0380: 1, H0709: 1, S0152: 1, S0332: 1, S0044: 1, S0188: 1, H0187: 1, L0356: 1, H0478: 1, H0627: 1, H0631: 1, L0611: 1, S0206: 1, S0032: 1, L0439: 1, L0786: 1, H0343: 1, L0592: 1, L0485: 1, H0668: 1, H0136: 1, S0194: 1, S0196: 1, S0460: 1, H0506: 1 and H0008: 1.		141750,
HPAMM72	1038344	661	2 - 520	2836	Gly-1 to Thr-11.	L0747: 5, H0424: 4, H0617: 4, L0769: 3, L0526: 3, S3014: 3, L0748: 3, L0750: 3, H0661: 2, H0663: 2, H0392: 2, H0156: 2, H0123: 2, H0033: 2, H0213: 2, H0059: 2, L0763: 2, L0542: 2, H0519: 2, L0751: 2,	16p13.3	141800, 141800, 141800, 141800, 141850, 141850, 141850, 141850, 141850,

HKZAT03	1038378	662	21 - 1559	2837	Thr-1 to Gly-8, Phe-49 to Leu-67, Gln-142 to Gly-150, Pro-274 to Leu-282,	H0617: 14, H0521: 11, L0794: 4, H0542: 4, H0638: 3, S0360: 3, L0648: 3, L0659: 3, L0779: 2, L0731: 2, L0757: 2, L0605: 2, L0615: 1, S0342: 1, H0580: 1, S0278: 1, H0550: 1, S0280: 1, L0021: 1, T0048: 1, H0052: 1, H0544: 1, H0545: 1, L0471: 1, H0012: 1, H0620: 1, H0014: 1, N0007: 1, S0051: 1, H0083: 1, H0284: 1, S0250: 1, H0688: 1, H0708: 1, H0080: 1, H0494: 1, H0509: 1, L0770: 1, L0764: 1, L0771: 1, L0376: 1, L0782: 1, L0809: 1, L0545: 1, L0666: 1, H0682: 1, H0659: 1, H0658: 1, H0672: 1, H0696: 1, S0044: 1, H0214: 1, L0743: 1, L0740: 1, L0754: 1, L0777: 1, S0260: 1, S0276: 1 and S0196: 1.	22q13.33	156850, 186580, 191092, 600140, 600273, 601313, 601785

HDQMA85	1038717	663	228 - 356	2838	Pro-396 to Leu-402, Arg-405 to Glu-410, Gly-436 to Ala-442, Arg-470 to Pro-476, Pro-481 to Leu-486.	L0665: 3, S0328: 3, H0518: 3, H0423: 3, S0358: 2, H0622: 2, H0641: 2, L0763: 2, L0663: 2, L0664: 2, H0689: 2, H0522: 2, H0555: 2, H0422: 2, H0624: 1, H0585: 1, H0657: 1, H0671: 1, H0402: 1, S0376: 1, H0580: 1, S0278: 1, H0549: 1, H0602: 1, H0586: 1, H0069: 1, H0635: 1, H0581: 1, H0546: 1, H0510: 1, H0179: 1, H0271: 1, H0644: 1, H0606: 1, H0090: 1, H0634: 1, H0551: 1, H0488: 1, H0509: 1, L0640: 1, L0800: 1, L0662: 1, L0804: 1, L0607: 1, L0657: 1, L0809: 1, L0790: 1, L0666: 1, H0593: 1, H0684: 1, H0672: 1, H0710: 1, S0434: 1, S0436: 1 and S0196: 1.		12p12.3-p12.1	103950, 112410,

								150100, 168470, 190070, 190070, 200990, 602096
							12p12.3-p12.1	103950, 112410, 150100, 168470, 190070, 190070, 200990, 602096
						L0748: 34, L0777: 15, S0438: 11, S0192: 11, L0608: 7, H0331: 6, H0574: 6, L0771: 6, S0027: 6, L0756: 6, H0632: 5, L0731: 5, S0360: 4, H0427: 4, L0662: 4, L0744: 4, L0779: 4, L0757: 4, S0242: 4, S0354: 3, S0408: 3, H0494: 3, H0509: 3, L0770: 3, L0775: 3, L0809: 3, L0666: 3, H0519: 3, H0648: 3, S3014: 3, S0028: 3, L0750: 3, H0661: 2, S0442: 2, S0358: 2, S0376: 2, S0444: 2, H0013: 2, S0280: 2, H0309: 2, H0545: 2, H0510: 2, H0032: 2, H0551: 2, S0142: 2, S0422: 2, L0774: 2, L0806: 2,
					Ala-14 to Asp-19, Lys-92 to Arg-110.			
			2839					
		3 - 578						
		664						
	1038718							
HVCCQ82								

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HTGFP54	1038915	665	22 - 528	2840	H0435: 2, S0218: 1 and H0415: 1.			
HBODF41	1039017	666	1 - 2418	2841	L0747: 26, L0740: 20, L0748: 18, L0752: 14, L0745: 13, L0599: 11, L0659: 8, H0509: 7, L0756: 7, L0777: 7, S0222: 6, S0010: 6, L0764: 6, L0776: 6, L0666: 6, L0754: 6, L0746: 6, H0013: 5, S0346: 5, H0050: 5, L0750: 5, L0758: 5, S0360: 4, H0574: 4, H0632: 4, S0280: 4, L0471: 4, H0039: 4, H0622: 4, L0766: 4, L0774: 4, L0783: 4, H0445: 4, L0366: 4, H0586: 3, H0251: 3, H0014: 3, T0010: 3, H0644: 3, L0769: 3,			

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HRODW53	1039068	667	45 - 494	2842	Arg-115 to Gln-127, Leu-137 to Val-150.	L0748: 14, L0766: 11, L0777: 5, L0794: 4, L0803: 4, L0776: 3, L0747: 3, L0749: 3, L0791: 2, L0438: 2, H0435: 2, L0779: 2, L0780: 2, S0192: 2, L0442: 1, S6024: 1, S0134: 1, H0583: 1, S0222: 1, H0421: 1, H0235: 1, H0620: 1, H0598: 1, H0059: 1, T0041: 1, S0426: 1, L0764: 1, L0662: 1, L0774: 1, L0805: 1, L0659: 1, L0809: 1, L0790: 1, L0792: 1, L0666: 1, L0664: 1, H0659: 1, H0670: 1, H0648: 1, L0740: 1,		

HPAMC60	1039290	668	1 - 1242	2843	Pro-7 to Pro-17, Leu-20 to Gly-26, Leu-48 to Val-54, Pro-65 to Asn-70, Glu-90 to Ala-95, Ala-102 to Gln-116, Glu-122 to Leu-137, Val-183 to Leu-192, Ala-235 to Ile-256, Gly-264 to Asp-270, Phe-282 to Ile-288, Arg-309 to Ala-314, Asn-330 to Asp-336, Ala-338 to Asp-344, Lys-358 to Lys-367.	L0750: 1, L0758: 1, S0106: 1 and S0446: 1. H0682: 1	15q22		102578, 109700, 151670, 154550, 601780
HLMHM83	1039491	669	155 - 745	2844	Val-43 to Tyr-48, Pro-50 to Ser-57, Thr-75 to Gly-83, Tyr-95 to Asn-105, Tyr-155 to Trp-163.	H0617: 7, L0771: 6, S0408: 4, S0358: 3, H0638: 2, L0761: 2, L0764: 2, L0655: 2, L0634: 2, L0666: 2, H0435: 2, L0751: 2, L0777: 2, H0506: 2, H0650: 1, H0254: 1, H0255: 1, S0444: 1, H0351: 1, H0549: 1, H0600: 1, H0592: 1, L0022: 1, H0744: 1,			

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HOUDK70	1039538	670	84 - 1142	2845	Phe-27 to Gly-32, Tyr-45 to Glu-57, Gly-80 to Asn-89, Ser-182 to Pro-187, Asp-270 to Ser-278, Tyr-288 to Trp-293.	L0748: 13, L0731: 8, H0046: 7, L0740: 7, L0758: 7, L0766: 6, L0665: 5, L0747: 5, L0749: 5, H0135: 4, L0769: 4, L0776: 4, L0659: 4, L0438: 4, L0752: 4, L0757: 4, S0436: 4, H0265: 3, S0222: 3, S0474: 3, H0424: 3, H0040: 3, L0662: 3, L0783: 3, H0672: 3, H0521: 3, L0439: 3, L0750: 3, H0556: 2, H0717: 2, L0415: 2, S0360: 2, H0486: 2, H0575: 2, H0581: 2, H0251: 2, L0738: 2, L0483: 2, H0494: 2, S0440: 2, L0761: 2, L0794: 2,		

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HCYBI10	1039579	671	2 - 1042	2846	Pro-29 to Ile-35, Gly-49 to Thr-90, Pro-113 to Val-123, Glu-129 to Lys-146, Glu-151 to Arg-163, Leu-166 to Arg-179.	L0771: 17, H0539: 6, S0440: 3, L0805: 3, L0776: 3, H0547: 3, S0406: 3, L0779: 3, H0012: 2, L0764: 2, L0666: 2, L0663: 2, H0689: 2, L0748: 2, L0758: 2, H0686: 1, S0442: 1, H0549: 1, T0114: 1, H0052: 1,		

					H0046: 1, H0687: 1, L0369: 1, L0770: 1, L0769: 1, L0772: 1, L0800: 1, L0806: 1, L0518: 1, L0809: 1, L0788: 1, H0144: 1, L0438: 1, H0660: 1, H0666: 1, H0648: 1, L0439: 1, L0747: 1, L0750: 1, L0756: 1, L0752: 1, L0759: 1, S0434: 1 and S0436: 1.		170500, 176960, 182452, 230200, 249000, 253250
HMEFK29	1039652	672	643 - 999	2847		H0402: 2, H0570: 1, H0266: 1 and H0666: 1.		
HAOSK79	1039663	673	48 - 659	2848	Asp-10 to Gly-17, Asp-38 to Ser-44, Asn-70 to Thr-79, Gly-81 to Ser-91, Lys-94 to Ala-102, Asp-110 to Ile-116, Asp-152 to Leu-157, Pro-172 to Glu-177.	L0748: 28, L0758: 13, L0769: 7, L0766: 7, S0026: 7, L0749: 6, H0266: 5, H0616: 4, L0750: 4, L0362: 4, H0341: 3, H0658: 3, L0747: 3, H0686: 2, H0318: 2, H0413: 2, H0494: 2, L0646: 2, H0659: 2, L0751: 2, L0731: 2, L0759: 2, L0588: 2, T0002: 1, H0656: 1, H0484: 1, H0661: 1, L0481: 1, H0125: 1, S0045: 1, H0351: 1, H0013: 1,		

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HPDRV42	1039689	674	3 - 1649	2849	Glu-31 to Pro-39, Thr-75 to Glu-80, Ala-131 to Gly-140, Ala-156 to Ala-165, Arg-184 to Phe-189, Asn-221 to Phe-228, Glu-239 to Glu-245, Ser-253 to Asp-261, Thr-267 to Thr-272, Thr-292 to Asp-297, Tyr-313 to Asn-325, Glu-385 to Leu-393,	H0521: 23, S0360: 15, H0046: 14, S0126: 13, L0747: 12, H0551: 11, H0318: 10, S0328: 9, H0542: 9, H0580: 8, H0486: 8, H0581: 8, H0615: 8, S0440: 8, H0660: 8, S0434: 8, H0543: 8, L0664: 7, H0556: 6, S0212: 6, H0494: 6, L0663: 6, S0358: 5, S0476: 5,	15q15	177070, 177070, 182500, 218000, 227220, 243500, 600839, 601800

					Tyr-400 to Lys-410, Pro-413 to Gly-420, Lys-454 to Leu-463, Pro-501 to Gly-514, Gln-535 to Leu-549.	H0013: 5, H0457: 5, H0553: 5, H0673: 5, H0696: 5, S0406: 5, L0740: 5, L0731: 5, L0596: 5, H0585: 4, H0661: 4, S0418: 4, S0356: 4, S0408: 4, H0575: 4, H0620: 4, H0617: 4, L0764: 4, L0666: 4, L0665: 4, H0519: 4, S3014: 4, S0027: 4, L0752: 4, H0265: 3, H0713: 3, H0657: 3, H0341: 3, H0671: 3, H0638: 3, S0420: 3, S0354: 3, H0619: 3, H0411: 3, H0370: 3, H0586: 3, H0587: 3, H0597: 3, L0471: 3, H0687: 3, S0250: 3, S0003: 3, S0142: 3, H0529: 3, L0662: 3, L0766: 3, L0651: 3, L0659: 3, H0690: 3, S0152: 3, H0436: 3, S0028: 3, L0748: 3, L0750: 3, L0779: 3, L0755: 3, L0757: 3, H0445: 3, S0011: 3, H0423: 3,		

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HOPJD35	1039703	675	2590 - 1349	2850	Ser-1 to Pro-16, Asn-40 to Gly-46, Pro-48 to Arg-53, Lys-64 to Pro-72, Val-87 to Asp-93, Asp-109 to Tyr-118, Glu-157 to Pro-172, Pro-178 to Gly-188, Glu-252 to Leu-263, Thr-266 to Leu-273, Glu-296 to Ala-310, Glu-312 to Gln-318, Glu-324 to Asn-340, Glu-344 to Gly-373, Glu-383 to Asn-395, Val-399 to Glu-414.	L0662: 7, H0013: 5, L0766: 5, L0803: 4, L0655: 4, L0665: 4, L0740: 4, L0731: 4, H0677: 4, T0042: 3, L0776: 3, L0809: 3, H0519: 3, L0750: 3, L0759: 3, H0543: 3, H0170: 2, L0470: 2, H0341: 2, S0360: 2, H0266: 2, H0551: 2, L0351: 2, H0529: 2, L0646: 2, L0521: 2, L0651: 2, L0659: 2, L0663: 2, L0664: 2, H0547: 2, H0659: 2, L0602: 2, H0518: 2, H0522: 2, S0406: 2, L0748: 2, L0747: 2,		

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HTFNP84	1039748	676	70 - 1227	2851	Tyr-11 to Val-16, Glu-37 to Arg-42, Asn-50 to Arg-58, Leu-82 to Leu-96, Glu-112 to Gln-120.	AR096: 1, AR089: 1, AR055: 1, AR053: 1, AR033: 1, AR061: 1, AR060: 0, AR104: 0, AR039: 0, AR052: 0 L0766: 16, S0440: 7, L0646: 7, H0547: 6, H0659: 5, L0749: 5, L0759: 5, H0650: 4, S0410: 4, S0422: 4, S0374: 4, H0341: 3, H0032: 3, H0040: 3, H0529: 3, L0804: 3,		

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HTHDT76	1039871	677	1 - 603	2852	Gln-16 to Ser-24.	S0420: 1, H0600: 1, H0587: 1, H0013: 1, H0428: 1, H0644: 1, H0063: 1, H0386: 1 and L0747: 1.		
HSYEC21	1039891	678	411 - 2372	2853		H0521: 9, L0439: 9, L0747: 8, L0655: 6, L0748: 6, S0212: 5, S6028: 4, L0483: 4, L0794: 4, L0766: 4,	12q21-q23	124200, 147440, 160781, 217300, 235800,

		H0040: 3, H0634: 3, S0386: 3, L0800: 3, L0662: 3, L0665: 3, L0438: 3, S0028: 3, L0740: 3, H0318: 2, H0544: 2, S0051: 2, H0615: 2, H0163: 2, H0494: 2, L0645: 2, L0649: 2, L0803: 2, L0804: 2, L0659: 2, H0547: 2, H0689: 2, S0380: 2, H0522: 2, L0743: 2, L0744: 2, L0749: 2, L0596: 2, L0366: 2, S0242: 2, S0114: 1, H0583: 1, H0650: 1, H0656: 1, H0341: 1, S0001: 1, H0483: 1, H0402: 1, H0638: 1, S0356: 1, S0354: 1, S0358: 1, S0408: 1, H0580: 1, L0103: 1, S0045: 1, H0640: 1, H0586: 1, H0360: 1, H0643: 1, H0486: 1, H0013: 1, H0036: 1, H0263: 1, H0546: 1, H0012: 1, S0050: 1, S0388: 1, H0399: 1, H0510: 1,		600175, 600808

					H0271: 1, H0687: 1, S0003: 1, S0214: 1, H0428: 1, T0006: 1, H0591: 1, H0551: 1, T0067: 1, H0412: 1, H0560: 1, H0641: 1, S0210: 1, S0426: 1, L0606: 1, L0657: 1, L0518: 1, L0545: 1, H0144: 1, H0519: 1, S0126: 1, S0378: 1, H0436: 1, S3014: 1, L0750: 1, L0756: 1, L0779: 1, L0780: 1, L0758: 1, L0759: 1, H0668: 1 and S0026: 1.		
HKGCO25	1040384	679	3 - 719	2854	Glu-53 to Phe-58, Arg-70 to Phe-79, Ile-94 to Val-102, Thr-106 to Thr-118, Glu-139 to Asp-149, Asp-183 to Lys-215.			
HNOJN70	1040385	680	273 - 425	2855		L0766: 12, L0759: 8, H0171: 6, L0754: 6, L0731: 6, H0624: 5, H0584: 5, H0031: 5, S0422: 5, L0663: 5, H0547: 5, L0756: 5, S0276: 5, H0686: 4, S0474: 4, L0662: 4,		

		L0777: 4, L0758: 4, H0170: 3, L0717: 3, H0457: 3, H0090: 3, L0770: 3, L0794: 3, L0650: 3, L0805: 3, L0655: 3, L0659: 3, L0666: 3, H0520: 3, H0543: 3, S0412: 3, H0657: 2, H0341: 2, H0306: 2, H0402: 2, S0358: 2, S0360: 2, H0574: 2, T0060: 2, H0318: 2, L0163: 2, H0328: 2, L0483: 2, H0591: 2, L0637: 2, L0646: 2, L0771: 2, L0521: 2, L0649: 2, L0803: 2, L0657: 2, L0656: 2, L0517: 2, L0789: 2, H0539: 2, H0521: 2, L0742: 2, L0439: 2, L0751: 2, L0747: 2, L0752: 2, L0592: 2, L0599: 2, L0594: 2, L0362: 2, H0556: 1, H0167: 1, H0685: 1, H0344: 1, H0650: 1, S0116: 1, S0418: 1, S0420: 1, S0356: 1, S0376: 1,				

		H0580: 1, S0045: 1, S0046: 1, S6026: 1, H0351: 1, S0222: 1, H0438: 1, H0486: 1, H0427: 1, L0021: 1, H0097: 1, H0004: 1, H0581: 1, L0041: 1, H0050: 1, L0471: 1, H0023: 1, H0057: 1, H0015: 1, H0051: 1, H0266: 1, S0336: 1, H0687: 1, S0003: 1, S0214: 1, H0622: 1, H0674: 1, H0040: 1, H0616: 1, H0413: 1, T0069: 1, H0100: 1, H0494: 1, H0561: 1, L0065: 1, H0509: 1, H0646: 1, L0598: 1, L0763: 1, L0769: 1, L0638: 1, L0796: 1, L0761: 1, L0641: 1, L0643: 1, L0549: 1, L0498: 1, L0375: 1, L0776: 1, L0527: 1, L0526: 1, L0518: 1, L0783: 1, L0809: 1, L0664: 1, H0144: 1, S0374: 1, T0068: 1, L0438: 1, L0352: 1,				

						H0519: 1, H0593: 1, H0682: 1, H0658: 1, S0328: 1, H0518: 1, H0694: 1, H0626: 1, S0028: 1, L0743: 1, L0740: 1, L0745: 1, L0750: 1, L0780: 1, H0445: 1, L0588: 1, L0593: 1, L0595: 1, S0026: 1, H0423: 1 and S0424: 1.		
HADFS31	1040388	681	440 - 832	2856	Ser-23 to Ser-34, Lys-48 to Glu-53, Cys-78 to Asn-88, Ala-108 to Asp-113, Glu-124 to Pro-131.	L0439: 13, L0438: 8, L0731: 7, L0756: 6, L0803: 4, L0754: 4, L0750: 4, S0358: 3, H0716: 2, H0427: 2, L0766: 2, L0659: 2, L0783: 2, H0435: 2, H0660: 2, L0755: 2, L0758: 2, S0436: 2, S0342: 1, H0650: 1, L0443: 1, S0442: 1, S0360: 1, H0587: 1, H0632: 1, L0021: 1, T0082: 1, H0051: 1, S6028: 1, H0090: 1, H0646: 1, L0640: 1, L0770: 1, L0794: 1, L0804: 1, L0805: 1, L0809: 1, L0647: 1,		

HJBDC89	1040569	682	1418 - 726	2857	Gly-11 to Pro-17, Ser-61 to Gly-68, Val-103 to Leu-108, His-157 to Pro-162, Glu-197 to Pro-203, Gly-207 to Thr-213.	L0439: 5, L0749: 5, L0770: 4, L0764: 4, L0438: 4, S0126: 4, L0758: 4, S0358: 3, L0768: 3, L0774: 3, L0783: 3, H0660: 3, S0152: 3, L0752: 3, L0755: 3, L0731: 3, L0592: 3, S0026: 3, H0656: 2, S0360: 2, S0010: 2, H0050: 2, H0169: 2, T0042: 2, L0775: 2, L0518: 2, L0809: 2, L0664: 2, L0665: 2, H0672: 2, L0754: 2, H0543: 2, L0615: 1, H0686: 1, S0116: 1, S0420: 1, S0408: 1, T0112: 1, H0156: 1, H0575: 1, H0706: 1, H0546: 1, H0572: 1, H0123: 1, L0471: 1, H0024: 1, H0373: 1, S0388: 1, T0010: 1, H0510: 1,	L0789: 1, L0666: 1, L0663: 1, H0690: 1, H0659: 1, H0670: 1, S0328: 1, S0028: 1, L0747: 1 and L0752: 1.	14q24.1-q24.3	104311, 109150, 182600, 245200, 601208

						S0003: 1, H0424: 1, H0031: 1, H0553: 1, H0165: 1, H0673: 1, H0708: 1, S0036: 1, H0040: 1, T0067: 1, H0488: 1, H0412: 1, S0039: 1, H0494: 1, H0509: 1, H0132: 1, S0144: 1, H0538: 1, H0529: 1, L0520: 1, L0800: 1, L0773: 1, L0794: 1, L0803: 1, L0804: 1, L0659: 1, L0528: 1, S0374: 1, S0148: 1, H0682: 1, H0696: 1, S0044: 1, L0748: 1, L0751: 1, L0745: 1, L0757: 1, H0445: 1, S0276: 1 and S0196: 1.		
HTAIX75	1040591	683	129 - 557	2858	Lys-34 to His-39.	AR055: 14, AR033: 8, AR052: 8, AR096: 7, AR053: 7, AR061: 7, AR089: 6, AR060: 6, AR104: 3, AR039: 2 L0662: 2, L0804: 2, L0748: 2, L0439: 2, L0779: 2, S0360: 1, H0635: 1, H0457: 1, H0179: 1, L0763: 1,		

							L0646: 1, L0645: 1, L0766: 1, L0659: 1 and H0658: 1.		
HODBO29	1040620	684	3 - 413	2859			H0373: 2, H0328: 2, H0428: 2, L0769: 2, L0439: 2, T0002: 1, S0376: 1, H0489: 1, S0278: 1, H0550: 1, H0253: 1, H0052: 1, H0063: 1, H0131: 1, L0764: 1, L0766: 1, L0352: 1, S0126: 1, S0380: 1, L0740: 1, L0747: 1, L0752: 1, L0592: 1, L0595: 1 and H0542: 1.		
HOCOF27	1040631	685	76 - 687	2860			H0264: 1, L0766: 1, H0660: 1 and H0539: 1.		
HSPSE88	1040694	686	2 - 922	2861			L0749: 7, S0026: 6, H0616: 4, L0766: 4, L0803: 4, L0665: 4, L0748: 4, L0740: 4, H0624: 3, H0170: 3, H0657: 3, S0358: 3, S0003: 3, L0455: 3, L0498: 3, L0809: 3, L0666: 3, H0659: 3, H0423: 3, S0442: 2, H0083: 2, H0038: 2, L0500: 2, L0764: 2,	11p15	108985, 186921, 602092

		L0499: 2, L0804: 2, L0775: 2, L0806: 2, L0509: 2, L0607: 2, L0657: 2, L0493: 2, L0513: 2, H0690: 2, L0602: 2, L0777: 2, L0752: 2, L0759: 2, L0600: 2, H0171: 1, H0713: 1, H0716: 1, L0002: 1, H0650: 1, H0341: 1, S0001: 1, H0638: 1, S0444: 1, S0408: 1, S0222: 1, H0486: 1, H0156: 1, L0021: 1, H0042: 1, H0253: 1, H0263: 1, H0544: 1, H0545: 1, H0271: 1, S0336: 1, S0022: 1, S0214: 1, H0328: 1, H0615: 1, H0428: 1, L0483: 1, H0673: 1, H0124: 1, S0036: 1, H0090: 1, H0040: 1, H0063: 1, H0551: 1, T0067: 1, T0041: 1, H0647: 1, L0520: 1, L0761: 1, L0800: 1, L0374: 1, L0662: 1, L0768: 1, L0381: 1, L0533: 1,				

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HSKXM78	1040826	687	1 - 354	2862	Pro-19 to Asn-26, His-58 to Pro-63.	H0556: 2, H0650: 1, S0376: 1, S0474: 1, H0038: 1, H0529: 1, H0683: 1, S3014: 1, S0206: 1, L0740: 1 and L0591: 1.		
HNLMB92	1040913	688	352 - 753	2863	Ala-1 to Gly-21, Pro-28 to Gln-35.	S0358: 8, S0010: 5, S3014: 5, S0126: 4, H0333: 3, T0067: 3, H0547: 3, L0747: 3, S0045: 2, H0486: 2, H0599: 2, S0346: 2, L0471: 2, H0428: 2,	X	

						H0616: 2, H0658: 2, S0028: 2, L0742: 2, H0170: 1, S0116: 1, H0449: 1, S0418: 1, S6026: 1, H0550: 1, S0222: 1, H0438: 1, T0040: 1, H0013: 1, H0156: 1, T0082: 1, H0196: 1, H0251: 1, H0530: 1, H0150: 1, H0023: 1, H0266: 1, H0687: 1, H0615: 1, T0006: 1, H0031: 1, H0068: 1, H0551: 1, H0100: 1, T0041: 1, S0150: 1, H0652: 1, S0144: 1, H0529: 1, L0543: 1, H0144: 1, S0374: 1, H0691: 1, H0520: 1, H0689: 1, H0684: 1, H0670: 1, H0660: 1, H0672: 1, H0539: 1, S3012: 1, S0027: 1, L0744: 1, L0754: 1, L0749: 1, L0750: 1, L0752: 1, L0755: 1, L0731: 1, L0757: 1 and S0194: 1.		
HE8ON57	1040925	689	577 - 149	2864	Pro-18 to Asp-25.	H0619: 1, H0013: 1, L0794: 1 and L0788: 1.		

HOCOC14	1040932	690	494 - 1384	2865	Leu-32 to Lys-43, Phe-92 to Arg-98, Glu-118 to Thr-136, Pro-173 to Tyr-178, Pro-215 to Asn-222, Leu-230 to Asn-235.	H0556: 8, L0758: 7, L0593: 7, H0542: 7, L0601: 6, L0747: 5, H0618: 4, H0620: 4, H0617: 4, H0494: 4, L0439: 4, L0751: 4, S0420: 3, S0046: 3, H0622: 3, H0087: 3, L0766: 3, H0690: 3, H0670: 3, S0328: 3, L0748: 3, L0754: 3, L0731: 3, H0543: 3, H0265: 2, H0650: 2, H0484: 2, H0255: 2, S0418: 2, H0549: 2, H0333: 2, H0024: 2, H0551: 2, S0150: 2, L0764: 2, L0662: 2, L0375: 2, L0663: 2, L0665: 2, H0660: 2, H0521: 2, S0146: 2, L0741: 2, L0779: 2, L0361: 2, L0603: 2, H0422: 2, H0170: 1, S0040: 1, H0295: 1, H0294: 1, H0657: 1, H0656: 1, H0341: 1, S0212: 1, H0661: 1, S0442: 1, S0354: 1, S0360: 1, L0717: 1,	19q13.1	164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716

		S0278: 1, H0437: 1, H0550: 1, H0438: 1, H0592: 1, H0497: 1, H0486: 1, H0101: 1, H0013: 1, H0575: 1, H0253: 1, H0581: 1, H0052: 1, H0251: 1, H0309: 1, H0204: 1, H0545: 1, H0041: 1, H0009: 1, H0081: 1, H0014: 1, H0083: 1, H0354: 1, H0266: 1, H0687: 1, H0292: 1, H0284: 1, H0039: 1, H0553: 1, H0606: 1, H0166: 1, H0068: 1, H0135: 1, H0040: 1, H0268: 1, H0412: 1, S0038: 1, H0100: 1, T0041: 1, H0280: 1, H0429: 1, H0561: 1, S0440: 1, H0641: 1, S0144: 1, S0210: 1, S0002: 1, L0640: 1, L0770: 1, L0769: 1, L0637: 1, L0761: 1, L0642: 1, L0771: 1, L0648: 1, L0774: 1, L0655: 1, L0629: 1, L0658: 1, L0809: 1,				

						L0789: 1, L0790: 1, L0666: 1, L0664: 1, H0547: 1, H0593: 1, H0689: 1, H0684: 1, S0330: 1, H0539: 1, S0152: 1, H0522: 1, H0134: 1, S0406: 1, H0555: 1, H0627: 1, L0743: 1, L0750: 1, L0756: 1, L0752: 1, L0757: 1, S0434: 1, S0436: 1, S0276: 1, H0423: 1 and S0424: 1.		
HOGDP49	1041049	691	1 - 489	2866	Pro-6 to Gly-12, Ala-30 to Arg-35, Arg-90 to Thr-102, Phe-112 to Asp-120, Asn-157 to Thr-163.	H0265: 2, H0556: 1, S0418: 1, S0376: 1, T0060: 1, S0280: 1, H0615: 1, H0628: 1, H0059: 1, H0100: 1, L0438: 1, S0126: 1, H0435: 1 and H0660: 1.		
HOFMK22	1041070	692	3 - 359	2867	Asp-22 to Val-42, Phe-50 to Tyr-55, Leu-65 to Gln-70.	H0415: 2		
HBGNT69	1041900	693	808 - 383	2868	Glu-20 to Ser-27, Ala-49 to Pro-55, Phe-66 to Asp-71, Ala-77 to Val-83, Pro-85 to Tyr-103, Pro-135 to Ala-142.	H0052: 3, H0617: 3, H0135: 3, H0012: 2, H0253: 1, S0210: 1, L0659: 1 and L0779: 1.		
HSPSI42	1042462	694	3684 - 283	2869	Pro-5 to Ser-12,	L0666: 16, L0751: 15,	Xp11.23	300047,

				Arg-20 to Lys-35, Gly-45 to Gly-56, Pro-81 to Cys-99, Arg-195 to Ser-207, Ser-287 to Pro-292, Thr-301 to Gly-306, Asn-336 to Met-341, Ser-357 to Arg-364, Cys-416 to Asp-430, Gln-450 to Asp-455, Pro-509 to Thr-516, Arg-523 to Gly-529, Lys-541 to Lys-546, Ser-623 to Arg-634, Tyr-636 to Gln-642, Asp-661 to Leu-671, Glu-692 to Lys-703, Gln-734 to Tyr-742, Thr-792 to Ile-798, Pro-806 to Thr-811, Phe-875 to Gly-880, Ser-886 to Gln-891, Val-897 to Glu-903, Glu-926 to Asn-932, Arg-945 to Asp-950, Pro-952 to Lys-958, Gly-991 to Gly-1001, Pro-1019 to Trp-	L0596: 8, S0010: 7, L0754: 7, L0731: 7, L0758: 7, L0595: 7, S0007: 6, L0741: 6, L0591: 6, H0556: 5, H0622: 5, L0662: 5, L0665: 5, L0743: 5, L0748: 5, L0745: 5, L0747: 5, H0657: 4, L0771: 4, L0663: 4, L0664: 4, H0689: 4, L0742: 4, L0439: 4, L0592: 4, L0362: 4, S0276: 4, H0661: 3, H0176: 3, H0545: 3, H0178: 3, H0424: 3, L0369: 3, L0766: 3, L0659: 3, H0547: 3, S0406: 3, L0750: 3, L0599: 3, L0361: 3, L0601: 3, H0543: 3, T0049: 2, H0484: 2, S0420: 2, S0360: 2, L0717: 2, H0370: 2, H0333: 2, H0635: 2, H0318: 2, H0196: 2, H0085: 2, H0546: 2, H0050: 2, T0010: 2, H0428: 2, H0213: 2, H0674: 2, H0591: 2,	300071, 300110, 300600, 301000, 301000, 301830, 309470, 309500, 309610, 309850, 311050, 312060

					1028, Lys-1082 to Met-1091, Val-1098 to Gly-1104, Cys-1116 to Glu-1122.	H0100: 2, S0142: 2, L5575: 2, L0372: 2, L0764: 2, L0774: 2, L0775: 2, L0378: 2, L0776: 2, L0657: 2, L0636: 2, H0144: 2, L0565: 2, H0690: 2, H0660: 2, S3014: 2, S0028: 2, L0746: 2, L0749: 2, L0752: 2, L0753: 2, S0436: 2, L0588: 2, L0608: 2, S0026: 2, H0352: 2, H0395: 1, H0713: 1, L0785: 1, H0483: 1, S0418: 1, S0442: 1, H0733: 1, H0208: 1, S0045: 1, H0393: 1, H0351: 1, S0278: 1, H0549: 1, L0622: 1, T0039: 1, H0250: 1, H0618: 1, T0048: 1, H0581: 1, H0596: 1, L0040: 1, H0597: 1, H0544: 1, L0041: 1, H0086: 1, N0006: 1, H0620: 1, H0057: 1, H0051: 1, S0051: 1, H0083: 1, H0594: 1, H0188: 1, H0039: 1,

		L0483: 1, T0006: 1, H0604: 1, H0405: 1, H0181: 1, H0617: 1, H0169: 1, L0455: 1, H0135: 1, H0038: 1, H0087: 1, T0067: 1, H0412: 1, H0413: 1, H0059: 1, T0069: 1, T0004: 1, L0351: 1, T0041: 1, S0440: 1, H0641: 1, S0422: 1, H0529: 1, L0536: 1, L0535: 1, L0638: 1, L0637: 1, L0646: 1, L0521: 1, L0794: 1, L0650: 1, L0376: 1, L0653: 1, L0655: 1, L0606: 1, L0635: 1, L0518: 1, L0382: 1, L0809: 1, L0519: 1, L0541: 1, L0790: 1, L0793: 1, L0532: 1, H0723: 1, H0520: 1, H0593: 1, H0683: 1, H0684: 1, H0659: 1, H0648: 1, H0672: 1, H0521: 1, H0696: 1, H0694: 1, S0037: 1, L0744: 1, L0740: 1, L0780: 1, L0757: 1,			

						L0759: 1, H0445: 1, L0587: 1, L0589: 1, L0593: 1, L0594: 1, S0106: 1, S0011: 1, H0136: 1, H0423: 1 and H0293: 1.		
HPDQD23	1042649	695	174 - 344	2870	Leu-17 to Glu-22, Pro-44 to Gly-51.	H0657: 4, H0687: 2, H0658: 2, H0422: 2, H0222: 1, H0581: 1, S0050: 1, H0412: 1, H0641: 1, H0538: 1, L0648: 1, L0662: 1, L0766: 1, L0775: 1, L0805: 1, L0809: 1, L0438: 1, H0689: 1, S0328: 1, H0525: 1, L0439: 1 and L0755: 1.		
HWMBA10	1042859	696	39 - 476	2871	Pro-18 to Pro-24, Thr-45 to Gly-54, Ser-60 to Ser-67, Ala-82 to His-92, Pro-94 to Ser-106, Pro-126 to Arg-133.	S0410: 52, H0617: 5, L0774: 4, S0408: 3, H0360: 3, H0486: 3, L0809: 3, S0380: 3, L0751: 3, L0749: 3, L0361: 3, S0358: 2, S0376: 2, S0360: 2, L0764: 2, L0779: 2, L0752: 2, H0484: 1, H0483: 1, S0442: 1, H0734: 1, H0370: 1, H0257: 1, L0623: 1, H0599: 1, H0575: 1,	12q22	147440, 201470, 235800, 273300

					H0706: 1, H0744: 1, H0231: 1, L0163: 1, H0083: 1, H0510: 1, H0606: 1, H0038: 1, T0067: 1, S0438: 1, S0422: 1, L0770: 1, L0803: 1, L0806: 1, L0776: 1, L0792: 1, L0793: 1, H0660: 1, S0406: 1, H0631: 1, L0750: 1, L0777: 1, H0445: 1, S0436: 1, H0543: 1 and S0424: 1.		
HACNG39	1042871	697	2534 - 900	2872	Asp-16 to Ser-25, Arg-52 to Lys-74, Ile-102 to Asn-109, Asp-138 to Gly-149, Ser-161 to Thr-168, Asn-225 to Arg-235, Asn-247 to Lys-256, His-302 to Cys-311, Ile-324 to Ser-347, Cys-355 to Tyr-361, Cys-365 to Pro-375, Ile-389 to Gln-398, Ile-429 to His-502, Thr-505 to Asp-533, Lys-539 to Ser-545.	L0805: 5, L0766: 4, H0341: 3, S0440: 3, H0650: 2, H0656: 2, H0156: 2, S0003: 2, H0591: 2, H0264: 2, H0560: 2, L0598: 2, S0374: 2, L0438: 2, L0749: 2, L0752: 2, H0423: 2, H0685: 1, H0449: 1, H0458: 1, L0005: 1, S0444: 1, S0408: 1, H0580: 1, H0619: 1, H0486: 1, H0013: 1, H0581: 1, H0194: 1, T0103: 1, H0083: 1, H0551: 1, H0477: 1, H0488: 1,		

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HETKL27	1042951	698	32 - 676	2873	Arg-11 to Gly-36.	AR089: 1, AR060: 1, AR055: 1, AR096: 1, AR053: 0, AR061: 0, AR033: 0, AR104: 0, AR039: 0 L0439: 19, H0046: 11, L0659: 8, L0752: 7, L0662: 6, H0435: 6, H0648: 6, L0803: 5, S0356: 4, S0440: 4, L0794: 4, L0663: 4, H0539: 4, S0152: 4, L0747: 4, L0779: 4, H0661: 3, S0360: 3, S0408: 3, H0598: 3, L0809: 3, L0665: 3, S0374: 3, L0438: 3, L0751: 3, L0731: 3, L0362: 3, H0171: 2, S0358: 2, S0376: 2, H0676: 2, H0393: 2,		

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HPCTH04	1043273	699	3 - 494	2874	H0638: 73, H0641: 67, S0358: 25, H0521: 24, L0747: 23, S0408: 17, S0360: 16, H0659: 14, L0748: 13, L0731: 13, H0250: 12, H0494: 12, L0757: 12, S0444: 11, S0026: 11, S0440: 10, S0328: 10, S0206: 9, S0132: 8, S0144: 8, S0007: 7, H0574: 7, S0374: 7, S0126: 7, S0330: 7, L0754: 7, L0749: 7, H0140: 6, H0545: 6, H0316: 6, S0142: 6, L0775: 6, H0522: 6, S0242: 6, H0657: 5, S0046: 5, H0486: 5, S0406: 5, S0027: 5, L0750: 5, S0040: 4, S0442: 4, H0546: 4, H0684: 4, H0648: 4, S3012: 4,	9q31	109400, 132800, 132800, 186855, 223900, 253800, 253800, 278700, 602088

		S3014: 4, L0742: 4, L0740: 4, L0756: 4, L0752: 4, L0755: 4, L0758: 4, H0686: 3, H0341: 3, H0664: 3, S0222: 3, H0592: 3, H0331: 3, T0109: 3, T0115: 3, H0046: 3, H0014: 3, S0003: 3, L0809: 3, H0547: 3, H0660: 3, H0667: 3, H0542: 3, H0171: 2, T0049: 2, H0663: 2, S0420: 2, S0356: 2, H0580: 2, S0045: 2, S0278: 2, H0537: 2, H0333: 2, H0069: 2, H0427: 2, H0098: 2, H0597: 2, H0544: 2, H0150: 2, L0471: 2, H0060: 2, H0109: 2, H0266: 2, H0644: 2, H0032: 2, S0438: 2, H0633: 2, L0762: 2, L0769: 2, L0372: 2, L0662: 2, L0806: 2, L0789: 2, L0666: 2, H0682: 2, H0670: 2, L0602: 2, H0696: 2, S0404: 2, L0588: 2,				

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HOCPK85	1043351	700	1216 - 305	2875		H0647: 1, H0646: 1, H0652: 1, S0344: 1, S0002: 1, L0598: 1, H0529: 1, L0520: 1, L0645: 1, L0773: 1, L0521: 1, L0626: 1, L0766: 1, L0649: 1, L0522: 1, L0653: 1, L0654: 1, L0379: 1, L0657: 1, L0559: 1, L0526: 1, L0782: 1, L0382: 1, L0519: 1, L0647: 1, S0052: 1, H0144: 1, H0435: 1, H0658: 1, H0672: 1, S0378: 1, S0152: 1, H0523: 1, H0187: 1, H0627: 1, H0631: 1, S0028: 1, S0032: 1, L0759: 1, S0260: 1, S0434: 1, L0608: 1, H0668: 1, H0665: 1, H0136: 1, S0192: 1, S0196: 1, S0424: 1, S0462: 1, H0506: 1, H0293: 1 and H0352: 1.	L0777: 16, L0779: 11, L0748: 10, S0358: 7, H0494: 7, L0759: 6, L0362: 6, H0529: 5,	19q12-q13.1	164731, 172400, 172400, 180901,

180901, 221770, 248600, 600918, 602716	L0766: 5, S0003: 4, L0770: 4, L0769: 4, S0330: 4, L0740: 4, L0747: 4, L0731: 4, L0758: 4, L0601: 4, H0664: 3, S0356: 3, S0360: 3, H0123: 3, L0471: 3, H0620: 3, H0100: 3, S0150: 3, L0764: 3, L0771: 3, L0662: 3, L0649: 3, L0803: 3, L0527: 3, S0374: 3, H0682: 3, H0660: 3, H0666: 3, H0648: 3, H0521: 3, L0755: 3, H0542: 3, H0556: 2, T0049: 2, S0418: 2, S0007: 2, S0045: 2, S0046: 2, H0443: 2, S0222: 2, H0586: 2, S0010: 2, H0581: 2, H0012: 2, H0373: 2, H0266: 2, H0031: 2, H0032: 2, H0551: 2, H0412: 2, H0538: 2, L0369: 2, L0637: 2, L0772: 2, L0773: 2, L0768: 2, L0375: 2, L0659: 2, S0126: 2, H0658: 2,					

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HVVBM94	1043532	701	1 - 852	2876	Lys-1 to Cys-12, Gln-51 to Leu-56, Asp-63 to Asn-70, Lys-75 to Gln-80, Pro-116 to Thr-122, Gly-181 to Gly-190, Asp-210 to Gly-218,	H0656: 16, S0360: 12, H0445: 10, H0059: 9, L0659: 8, L0662: 7, L0748: 7, H0650: 6, H0341: 6, H0318: 6, L0731: 6, S0376: 5, S0440: 5, S0380: 5,	11q21-q22	105580, 133780, 203100, 203100, 602574, 602574

					Thr-252 to Ile-268, Leu-274 to Lys-284.	H0657: 4, H0125: 4, L0655: 4, L0666: 4, S0358: 3, H0486: 3, H0014: 3, H0648: 3, L0602: 3, H0255: 2, H0602: 2, H0039: 2, H0622: 2, H0264: 2, L0763: 2, L0766: 2, L0774: 2, L0806: 2, L0776: 2, L0665: 2, H0672: 2, S0328: 2, H0134: 2, H0555: 2, L0743: 2, H0671: 1, H0402: 1, H0638: 1, S0007: 1, H0592: 1, H0250: 1, H0635: 1, H0599: 1, H0108: 1, H0004: 1, H0597: 1, H0231: 1, H0046: 1, H0169: 1, H0316: 1, T0042: 1, H0646: 1, L0762: 1, L0800: 1, L0767: 1, L0768: 1, L0387: 1, L5574: 1, L0527: 1, L0657: 1, L0634: 1, L0809: 1, L0792: 1, L0663: 1, H0690: 1, H0682: 1, H0435: 1, H0659: 1, S0378: 1, H0694: 1,		

HVVBC43	1043553	702	2754 - 2083	2877	Arg-3 to Thr-10, Arg-26 to Gly-42, Asn-46 to Ser-59, Glu-106 to Ala-122, Ser-129 to Asp-139, Thr-144 to Thr-156, Leu-197 to Thr-206, Pro-208 to Tyr-219.	L0747: 1, L0749: 1, L0779: 1, L0755: 1, S0308: 1 and H0506: 1.	4p16.3		134934, 134934, 134934, 134934, 134934, 143100, 180072, 180072, 194190, 252800, 252800, 252800, 600965
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HTPDM31	1044199	703	1010 - 3	2878	Ser-49 to Leu-55, Pro-151 to Asp-157, Ala-168 to Arg-184, Pro-191 to Pro-215, Pro-232 to Pro-240, Pro-255 to Arg-268.	H0617: 6, L0666: 3, H0188: 2, H0181: 2, H0196: 1, H0039: 1, H0673: 1, L0373: 1, L0775: 1, L0659: 1, L0809: 1, L0789: 1, L0663: 1, L0665: 1, H0658: 1, S0330: 1, S0378: 1 and S0406: 1.		
HSQEK12	1044577	704	35 - 439	2879	Ala-1 to Asp-16.	L0748: 5, L0439: 5, L0751: 3, L0777: 3, L0758: 2, L0596: 2, L0603: 2, S0001: 1, S0278: 1, H0581: 1, H0052: 1, H0123: 1, H0620: 1, S0388: 1, H0628: 1, H0040: 1, H0616: 1, H0646: 1, L0763: 1, L0770: 1,		

					L0769: 1, L0800: 1, L0794: 1, L0803: 1, L0378: 1, L0776: 1, L0655: 1, L0789: 1, H0670: 1, S0328: 1, H0696: 1, S0406: 1, H0436: 1, L0746: 1, L0779: 1, S0031: 1, L0595: 1, S0011: 1 and S0026: 1.			304040, 305100, 305450, 309605, 312760, 314250, 314580
HPDRZ16	1044618	705	187 - 834	2880	Pro-16 to Ala-22, Ala-26 to Val-31, Ser-66 to Val-73, Ala-80 to Pro-90, Glu-127 to Ala-135, Glu-142 to Glu-161, Leu-166 to Trp-173, Pro-176 to Gln-183, Arg-204 to Asp-211.	L0766: 14, L0769: 12, L0774: 10, L0770: 8, L0740: 7, L0759: 7, H0484: 5, H0617: 5, L0803: 5, L0751: 5, L0747: 5, H0483: 4, S0358: 4, H0670: 4, L0780: 4, L0731: 4, H0445: 4, S0436: 4, H0341: 3, H0618: 3, H0251: 3, H0546: 3, H0087: 3, L0761: 3, L0800: 3, L0794: 3, L0789: 3, H0672: 3, L0743: 3, L0750: 3, L0757: 3, H0728: 2, H0733: 2, S0474: 2, H0545: 2, H0620: 2, H0024: 2, H0428: 2, H0649: 2, L0772: 2,	Xq13.1		

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HVCBC44	1044635	706	3 - 896	2881	Ala-1 to Gln-8, Lys-18 to Arg-23, Lys-56 to Val-64, Lys-129 to Ala-140, Pro-149 to Asn-155.	H0666: 70, L0766: 3, L0665: 3, H0596: 2, L0794: 2, L0747: 2, H0624: 1, H0656: 1, L0717: 1, H0013: 1, H0318: 1, H0169: 1, L0643: 1, L0645: 1, L0764: 1, L0804: 1, L0657: 1, H0660: 1, L0757: 1, L0588: 1, L0592: 1, L0595: 1 and L0601: 1.		
HPIAC22	1044711	707	701 - 1741	2882		L0745: 23, L0770: 2, S0150: 1, L0761: 1,		

						L0788: 1, H0520: 1, L0746: 1, L0747: 1, L0758: 1 and L0759: 1.		
HSODA53	1044741	708	855 - 995	2883		AR055: 11, AR060: 6, AR033: 5, AR052: 4, AR061: 4, AR104: 4, AR096: 4, AR089: 4, AR039: 3, AR053: 3 H0328: 2, H0124: 2, L0766: 2, H0171: 1, L0005: 1, S0360: 1, H0329: 1, H0615: 1, H0477: 1, S0440: 1, L0598: 1, H0547: 1, S0126: 1, S0168: 1 and H0595: 1.		
HE9ML74	1044760	709	3 - 959	2884	Asp-8 to Asp-20, Phe-43 to Arg-52, Ser-102 to Asp-107, His-109 to Asp-124, Phe-131 to Lys-136, Pro-143 to Pro-149, Lys-189 to Leu-200, Asn-305 to Trp-310.	AR033: 5, AR060: 4, AR096: 4, AR089: 2, AR053: 1, AR061: 1, AR052: 1, AR055: 0, AR104: 0 L0803: 9, L0758: 7, L0439: 6, L0740: 5, L0766: 4, L0666: 4, L0663: 4, L0754: 4, L0747: 4, L0804: 3, H0144: 3, L0750: 3, L0756: 3, L0752: 3, L0600: 3, S0003: 2, L0455: 2, S0366: 2,		

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HPDRB76	1044762	710	145 - 855	2885	Glu-14 to Gly-20, Gly-30 to Ala-37, Glu-121 to Leu-127, Lys-152 to Tyr-157, Glu-159 to Thr-173, Leu-177 to Lys-186.	L0747: 8, S0358: 6, L0766: 5, L0774: 5, L0750: 5, L0666: 4, S0406: 4, L0731: 4, H0341: 3, H0696: 3, L0748: 3, L0758: 3, H0650: 2, S0356: 2, S0410: 2, L0717: 2, H0014: 2, L0667: 2, L0768: 2, L0775: 2, L0659: 2, L0783: 2, H0659: 2, H0648: 2, S0330: 2, H0539: 2, L0742: 2, L0439: 2, L0745: 2, L0757: 2, L0759: 2, L0592: 2, L0599: 2, L0595: 2, H0657: 1, S0212: 1, H0662: 1, H0125: 1, S0420: 1, S0354: 1, S0444: 1, S0132: 1, S0476: 1, H0370: 1, L0181: 1, H0069: 1, H0427: 1, L0021: 1, H0575: 1, H0318: 1, S0214: 1, H0039: 1, H0651: 1, S0013: 1, H0696: 1, H0436: 1, L0779: 1, L0608: 1, S0446: 1 and H0506: 1.	1p34	130500, 133200, 138140, 168360, 171760, 171760, 176100, 176100, 178300, 230000, 255800

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HSYDI55	1044769	711	231 - 1070	2886	Thr-52 to Glu-63, Lys-108 to Asn-118, Gly-148 to Ile-154, Glu-178 to Thr-183, Ala-185 to Arg-195, Lys-202 to Lys-207, Lys-209 to Arg-222, Ser-226 to Glu-233.	AR052: 16, AR053: 9, AR033: 5, AR089: 4, AR096: 3, AR060: 3, AR104: 2, AR055: 2, AR039: 1, AR061: 1 H0651: 11, L0794: 8, H0038: 5, L0805: 4, L0758: 4, S0358: 3, S0476: 3, L0766: 3, L0803: 3, L0665: 3, H0144: 3, H0521: 3, L0748: 3, L0740: 3, L0756: 3, H0222: 2,		

		S0420: 2, S0360: 2, H0551: 2, H0412: 2, S0440: 2, L0804: 2, L0789: 2, L0666: 2, L0747: 2, S0436: 2, L0599: 2, H0542: 2, H0223: 1, H0159: 1, H0717: 1, H0716: 1, S0282: 1, H0580: 1, S0046: 1, H0411: 1, H0486: 1, H0013: 1, H0596: 1, L0738: 1, H0544: 1, H0046: 1, L0471: 1, H0014: 1, H0083: 1, S0003: 1, H0553: 1, L0055: 1, H0124: 1, H0591: 1, H0616: 1, H0059: 1, H0494: 1, S0294: 1, H0529: 1, L0770: 1, L0769: 1, L0800: 1, L0644: 1, L0764: 1, L0771: 1, L0662: 1, L0364: 1, L0653: 1, L0776: 1, L0655: 1, L0659: 1, L0526: 1, L0382: 1, S0148: 1, H0693: 1, S0328: 1, S0152: 1, H0436: 1, H0631: 1, S3014: 1,				

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HOGCI31	1044821	712	49 - 558	2887		H0435: 1 and S0424: 1.		
HNOKX86	1044893	713	69 - 575	2888		L0740: 20, L0754: 14, L0742: 9, L0771: 7, L0748: 7, L0749: 7, L0752: 6, S0422: 5, L0770: 5, H0585: 4, S0360: 4, H0581: 4, L0769: 4, L0775: 4, S0374: 4, H0521: 4, L0747: 4, L0779: 4, L0753: 4, L0758: 4, H0295: 3, S0278: 3, S0440: 3, S0002: 3, L0649: 3, L0806: 3, S0126: 3, S0380: 3, S0434: 3, S0436: 3, S0026: 3, H0170: 2, H0661: 2, S0358: 2, S0045: 2, H0370: 2, H0442: 2, H0318: 2, S0474: 2, H0687: 2, S0003: 2, H0551: 2, S0438: 2, H0509: 2,		

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HTPHG81	1045117	714	2112 - 577	2889	Thr-19 to Ala-26.	AR039: 19, AR053: 13, AR096: 10, AR052: 9, AR055: 9, AR033: 9, AR089: 8, AR104: 7, AR060: 7, AR061: 6		

							H0553: 2, S0282: 1, S0049: 1, H0052: 1, H0622: 1, H0040: 1 and S0406: 1.	
HPCTV49	1045379	715	34 - 444	2890	Ser-21 to Pro-28, Pro-36 to Ser-63, Gln-67 to Thr-83, Arg-88 to Thr-94, Pro-106 to Lys-111, Gly-125 to Gly-132.		S0358: 17, S0360: 7, L0604: 7, L0769: 5, L0497: 5, L0655: 5, L0590: 4, H0543: 4, L0622: 3, L0499: 3, L0775: 3, H0659: 3, H0670: 3, L0757: 3, L0588: 3, L0601: 3, S0276: 3, S0114: 2, H0657: 2, S0007: 2, H0586: 2, T0109: 2, T0048: 2, H0327: 2, L0471: 2, H0494: 2, L0770: 2, L0662: 2, L0527: 2, L0513: 2, L0530: 2, H0144: 2, H0689: 2, H0672: 2, H0521: 2, L0750: 2, L0755: 2, L0731: 2, L0596: 2, L0599: 2, L0608: 2, L0440: 1, T0049: 1, H0341: 1, H0483: 1, H0125: 1, H0580: 1, S0045: 1, H0351: 1, H0411: 1, S0222: 1, L0623: 1,	

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HHGDK68	1045464	716	121 - 999	2891	Arg-128 to Asp-133, Lys-155 to Gln-164, Tyr-168 to Leu-174, Glu-190 to Leu-197, Pro-213 to Arg-224, Met-226 to Ser-241, Pro-247 to Ser-255.	L0361: 1, S0026: 1, H0667: 1 and H0542: 1.	22q13.1		103050, 103050, 124030, 124030, 138981, 182380, 188826, 190040, 190040, 190040
HNOKM38	1045500	717	5155 - 3530	2892	Gln-12 to His-23.	L0731: 21, L0747: 17, L0776: 16, L0748: 14, L0777: 14, L0752: 13, L0755: 13, L0769: 11, L0750: 11, L0766: 10, L0806: 8, L0770: 7, H0556: 5, L0599: 5, L0774: 4, L0756: 4, L0779: 4, L0753: 4, H0341: 3, L0761: 3, L0764: 3, L0771: 3, L0809: 3, H0144: 3, L0743: 3, L0754: 3, L0757: 3, H0265: 2, S0134: 2, H0306: 2, H0402: 2, H0580: 2, H0393: 2, H0369: 2, H0441: 2, H0013: 2,			

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HHFUN47	1045842	718	4701 - 2335	2893	Glu-98 to Asp-109, Ser-121 to Ile-128.	L0748: 13, L0754: 5, L0746: 5, S0356: 4, H0052: 4, L0803: 4, L0745: 4, L0749: 4, L0731: 4, S0360: 3, H0032: 3, H0646: 3, L0766: 3, L0438: 3, L0439: 3, L0740: 3, L0777: 3, S0222: 2, H0581: 2, H0014: 2, S0003: 2, H0591: 2, L0775: 2, L0664: 2, H0435: 2, L0743: 2, L0485: 2, H0542: 2, H0543: 2, L0600: 2, S6024: 1, S0376: 1, H0331: 1, S0414: 1,		

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HNTSV18	1045995	719	1 - 504	2894	Ala-3 to Gly-19, Arg-29 to Gly-34, Gly-41 to Pro-51, Tyr-90 to Gly-102, Pro-119 to Trp-124.	AR104: 6, AR033: 5, AR053: 5, AR089: 4, AR096: 3, AR060: 3, AR061: 1, AR055: 0, AR039: 0 H0144: 2, S0126: 2,	7q21-q22		116860, 126650, 126650, 129900, 133170, 154276,

					S0212: 1, S0046: 1, H0587: 1, H0024: 1, S0036: 1, H0652: 1, L0649: 1, H0547: 1, H0658: 1 and L0439: 1.		173360, 173360, 602136, 602136, 602136, 602447
HWHGU08	1046137	720	2564 - 1749	2895	Ala-43 to Thr-51, Gly-104 to Arg-112.	S0412: 19, L0803: 10, S0003: 9, S0414: 6, L0770: 6, L0766: 6, L0663: 6, L0754: 6, S0406: 5, L0752: 5, S0222: 4, L0771: 4, H0144: 4, L0439: 4, L0731: 4, S0444: 3, L0717: 3, H0328: 3, L0662: 3, L0655: 3, S0330: 3, H0521: 3, L0748: 3, L0759: 3, H0556: 2, S0356: 2, S0354: 2, H0676: 2, S0408: 2, H0013: 2, H0575: 2, H0050: 2, H0266: 2, S0214: 2, H0428: 2, H0031: 2, H0674: 2, T0067: 2, L0764: 2, L0806: 2, L0805: 2, L0809: 2, L0666: 2, L0664: 2, L0665: 2, H0547: 2, H0435: 2, H0659: 2,	10p11.2-p12	600964, 602026

		H0670: 2, H0660: 2, H0539: 2, S0028: 2, L0779: 2, L0777: 2, L0780: 2, L0588: 2, L0595: 2, H0423: 2, H0685: 1, S0218: 1, H0650: 1, H0656: 1, H0341: 1, S0001: 1, H0125: 1, S0418: 1, S0420: 1, S0360: 1, S0046: 1, S0278: 1, H0437: 1, H0455: 1, H0586: 1, H0587: 1, H0574: 1, H0486: 1, H0156: 1, S0010: 1, H0196: 1, H0052: 1, T0110: 1, H0597: 1, H0046: 1, H0572: 1, H0123: 1, L0471: 1, H0015: 1, S0362: 1, L0163: 1, S6028: 1, H0687: 1, H0622: 1, T0023: 1, L0483: 1, H0553: 1, H0628: 1, H0032: 1, S0364: 1, H0708: 1, H0591: 1, H0040: 1, H0634: 1, H0551: 1, H0412: 1, L0475: 1, S0015: 1, H0625: 1, S0440: 1,			

					S0422: 1, S0426: 1, H0529: 1, L0762: 1, L0769: 1, L0796: 1, L0761: 1, L0667: 1, L0772: 1, L0641: 1, L0642: 1, L0643: 1, L0773: 1, L0804: 1, L0775: 1, L0653: 1, L0659: 1, L0783: 1, L0790: 1, T0068: 1, H0519: 1, H0658: 1, H0696: 1, S0206: 1, L0747: 1, L0749: 1, L0755: 1, L0758: 1, H0445: 1, S0436: 1, L0592: 1, H0668: 1, S0026: 1, H0653: 1, H0667: 1, H0136: 1, H0542: 1, S0424: 1 and S0446: 1.		
HE6CR19	1046177	721	870 - 508	2896	Val-3 to Gly-14, Ser-65 to Asn-70.	AR089: 30, AR060: 18, AR039: 17, AR033: 16, AR096: 16, AR104: 13, AR055: 12, AR052: 12, AR053: 8, AR061: 8 L0731: 13, L0748: 11, L0747: 10, L0740: 6, L0763: 5, L0750: 5, L0770: 4, L0766: 4,	2p22-p21	120435, 120435, 126600, 135300, 136435, 152790, 152790, 157170, 182601, 278300,

		L0555: 4, L0776: 4, S0358: 3, H0100: 3, S0440: 3, L0375: 3, L0664: 3, L0665: 3, L0756: 3, L0752: 3, T0049: 2, S0442: 2, S0045: 2, L0471: 2, T0006: 2, H0413: 2, L0769: 2, L0774: 2, L0775: 2, L0655: 2, L0659: 2, L0382: 2, L0666: 2, L0663: 2, H0658: 2, S0328: 2, S0406: 2, L0439: 2, L0755: 2, L0588: 2, L0591: 2, L0362: 2, S0116: 1, H0483: 1, S0360: 1, S0132: 1, H0393: 1, S0278: 1, H0586: 1, L0021: 1, H0052: 1, H0251: 1, H0544: 1, H0041: 1, H0266: 1, S0214: 1, T0023: 1, H0641: 1, L0772: 1, L0773: 1, L0662: 1, L0386: 1, L0388: 1, L0652: 1, L0653: 1, L0656: 1, L0526: 1, L0518: 1, L0809: 1, S0126: 1,		601071, 601771, 602134

HE9EJ82	1046856	722	3 - 173	2897	Glu-12 to Phe-17, Ser-44 to Asn-57.	H0659: 1, S0330: 1, S0380: 1, L0602: 1, H0710: 1, S0027: 1, L0753: 1, L0757: 1, L0759: 1, L0480: 1, H0665: 1, S0276: 1, H0422: 1 and S0384: 1.	1q21-q23	104770, 107300, 107670, 110700, 131210, 134638, 135940, 136132, 145001, 146740, 146740, 146740, 146790, 152445, 152445, 159001, 173610, 174000, 176310, 179755, 182860, 182860, 182860,
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HRADC23	1046980	723	49 - 339	2898		S0250: 2 and H0555: 1.			
HODHS68	1047137	724	516 - 1220	2899	Thr-26 to Ala-44, Pro-55 to His-71, Ser-76 to Cys-83, Asn-92 to Lys-104, Pro-149 to Tyr-158, Ser-208 to Asp-214, Glu-228 to Tyr-234.	L0748: 40, L0740: 39, L0754: 23, H0556: 19, H0620: 13, L0755: 12, L0731: 12, L0741: 11, S0002: 10, L0766: 10, L0439: 10, H0265: 9, H0013: 9, H0521: 9, L0747: 9, L0758: 8, H0599: 7, L0794: 7, L0751: 7, L0779: 7, L0777: 7, L0752: 7,	3q21	106165, 117700, 117700, 150210, 169600, 180380, 180380, 180380, 190000, 203500, 232050,	

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		H0489: 1, S0046: 1, H0619: 1, H0437: 1, H0550: 1, H0441: 1, H0461: 1, H0455: 1, H0438: 1, H0601: 1, S0005: 1, H0333: 1, H0574: 1, H0632: 1, H0486: 1, H0270: 1, H0244: 1, H0069: 1, H0635: 1, S0280: 1, L0021: 1, H0002: 1, L0022: 1, H0042: 1, H0036: 1, H0318: 1, H0581: 1, H0421: 1, S0049: 1, H0251: 1, H0309: 1, T0115: 1, H0597: 1, H0041: 1, T0003: 1, H0051: 1, S0051: 1, H0083: 1, S6028: 1, H0266: 1, H0267: 1, H0288: 1, H0286: 1, S0214: 1, H0252: 1, H0070: 1, H0213: 1, H0553: 1, L0055: 1, H0708: 1, H0598: 1, H0063: 1, H0056: 1, T0069: 1, S0386: 1, H0100: 1, L0564: 1, T0042: 1, S0016: 1, H0561: 1,				

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HOPKT59	1047169	725	275 - 814	2900	Gln-1 to Gln-11, Ala-24 to Asp-33, Pro-81 to Arg-91, Lys-99 to Lys-115, Trp-126 to Arg-142, Asp-162 to Glu-180.	L0588: 1, L0599: 1, L0362: 1, L0361: 1, S0276: 1, H0542: 1, S0384: 1 and H0293: 1.	H0556: 15, H0090: 12, S0152: 11, H0543: 10, H0553: 9, S0026: 9, H0341: 8, S0358: 8, H0046: 8, S0440: 8, L0659: 8, L0665: 8, L0595: 8, H0657: 7, H0266: 7, H0591: 7, H0529: 7, L0666: 7, L0663: 7, H0144: 7, H0547: 7, H0521: 7, L0756: 7, L0731: 7, S0360: 6, S0476: 6, S0003: 6, H0615: 6, H0644: 6, H0040: 6, H0413: 6, L0662: 6, L0664: 6, L0754: 6, L0752: 6, L0599: 6, L0608: 6, H0624: 5, S0408: 5, T0109: 5, H0013: 5, H0551: 5, H0560: 5, L0803: 5, L0655: 5, H0519: 5, S0126: 5, H0684: 5, L0439: 5, L0759: 5, S0436: 5, H0542: 5,		

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							S0142: 1, S0422: 1, L0598: 1, L0631: 1, L0638: 1, L0641: 1, L0764: 1, L0773: 1, L0648: 1, L0363: 1, L0767: 1, L0768: 1, L5574: 1, L0381: 1, L0552: 1, L0774: 1, L0375: 1, L0607: 1, L0634: 1, L0782: 1, S0428: 1, S0374: 1, H0593: 1, H0689: 1, H0435: 1, H0660: 1, H0666: 1, H0648: 1, H0672: 1, S0380: 1, H0709: 1, S0013: 1, H0696: 1, H0704: 1, S0174: 1, S0406: 1, H0436: 1, H0576: 1, H0478: 1, S0432: 1, S3012: 1, S0028: 1, L0777: 1, L0755: 1, L0480: 1, L0597: 1, L0589: 1, L0591: 1, L0592: 1, L0594: 1, L0362: 1, L0601: 1, H0668: 1, H0667: 1, H0136: 1, S0194: 1 and H0008: 1.	L0747: 10, L0758: 6,	
HMCFK45	1047212	726	121 - 786	2901	Pro-15 to Leu-21,			

					Lys-29 to Asn-39, Arg-110 to Arg-115, Lys-120 to Asn-125, Glu-153 to Leu-158, Pro-173 to Val-181.	L0752: 5, L0774: 4, L0663: 4, L0748: 4, L0751: 4, L0775: 3, L0757: 3, L0759: 3, S0360: 2, S0007: 2, H0687: 2, L0769: 2, L0761: 2, L0766: 2, L0806: 2, L0750: 2, L0777: 2, L0753: 2, L0755: 2, H0254: 1, S0420: 1, S0356: 1, H0392: 1, H0587: 1, L0021: 1, H0046: 1, H0178: 1, H0620: 1, S0050: 1, H0617: 1, H0673: 1, H0616: 1, S0144: 1, S0344: 1, L0637: 1, L0646: 1, L0374: 1, L0771: 1, L0767: 1, L0661: 1, L0629: 1, L0659: 1, L0783: 1, L0367: 1, L0368: 1, L0666: 1, L0664: 1, L0665: 1, H0670: 1, H0672: 1, S0404: 1, H0436: 1, L0740: 1, L0749: 1, L0603: 1, H0422: 1, S0424: 1 and H0677: 1.		
HPIAN63	1047381	727	2 - 595	2902	Lys-1 to Leu-6,	L0777: 13, L0794: 8,		

	Ser-36 to Ser-41, Arg-54 to His-63.		L0438: 7, L0748: 7, L0659: 6, L0759: 6, L0591: 6, H0617: 5, L0439: 5, L0779: 5, L0758: 5, L0596: 5, H0556: 4, H0618: 4, H0052: 4, L0770: 4, L0803: 4, L0789: 4, S0418: 3, H0013: 3, H0628: 3, H0494: 3, L0598: 3, L0769: 3, L0804: 3, L0509: 3, L0665: 3, H0659: 3, H0624: 2, H0265: 2, H0717: 2, S0442: 2, S0354: 2, S0358: 2, L0149: 2, S0046: 2, S0278: 2, H0559: 2, S0010: 2, S0049: 2, L0041: 2, H0050: 2, H0083: 2, H0328: 2, UNKWN: 2, H0529: 2, L0662: 2, L0776: 2, L0655: 2, H0670: 2, H0660: 2, S0406: 2, L0747: 2, L0749: 2, L0752: 2, L0731: 2, S0436: 2, L0594: 2, H0542: 2, H0170: 1, H0171: 1, H0657: 1,		

		L0785: 1, H0384: 1, H0671: 1, H0663: 1, L0534: 1, S0356: 1, S0444: 1, S0408: 1, H0549: 1, S0222: 1, H0643: 1, H0632: 1, S0414: 1, H0257: 1, H0486: 1, T0082: 1, T0048: 1, H0318: 1, S0474: 1, H0194: 1, H0263: 1, H0327: 1, H0544: 1, H0546: 1, H0046: 1, H0057: 1, L0163: 1, H0051: 1, S0051: 1, T0010: 1, H0266: 1, H0188: 1, L0052: 1, H0288: 1, S0003: 1, H0604: 1, H0644: 1, H0068: 1, H0316: 1, S0036: 1, H0040: 1, H0164: 1, H0413: 1, H0059: 1, H0100: 1, L0564: 1, H0625: 1, S0448: 1, S0440: 1, S0150: 1, L0637: 1, L0373: 1, L0800: 1, L0374: 1, L0765: 1, L0771: 1, L0766: 1, L0649: 1, L0378: 1, L0805: 1,				

					L0493: 1, L0783: 1, L0383: 1, L5622: 1, L0368: 1, L0787: 1, L0666: 1, L0663: 1, H0144: 1, S0374: 1, L0565: 1, H0520: 1, H0547: 1, H0658: 1, H0666: 1, H0672: 1, H0651: 1, S0380: 1, L0741: 1, L0754: 1, L0750: 1, L0756: 1, S0031: 1, L0589: 1, L0590: 1, L0485: 1, L0608: 1, L0604: 1, L0593: 1, H0506: 1 and H0352: 1.		
HNSME49	1047403	728	1295 - 558	2903	Glu-16 to Gly-28, Glu-73 to Glu-78, Asp-94 to Ser-103, Lys-124 to Asp-129, Gln-149 to Arg-155, Ala-190 to Ser-233, Val-240 to Pro-246.	L0794: 6, H0685: 2, S0356: 2, H0090: 2, H0494: 2, L0766: 2, L0803: 2, L0654: 2, L0665: 2, H0435: 2, L0362: 2, H0556: 1, H0384: 1, H0484: 1, S0418: 1, H0497: 1, H0013: 1, S0010: 1, S0346: 1, S0049: 1, H0545: 1, H0375: 1, H0674: 1, L0455: 1, H0413: 1, L0639: 1, L0800: 1, L0376: 1,		

					L0378: 1, L0805: 1, L0657: 1, L0659: 1, L0783: 1, L0809: 1, L0789: 1, L0663: 1, L0664: 1, S0374: 1, H0520: 1, S0126: 1, H0666: 1, H0539: 1, S0152: 1, S0037: 1, L0756: 1, L0779: 1, L0777: 1, L0755: 1, S0436: 1, L0592: 1 and H0506: 1.		
HWEAC64	1047473	729	155 - 721	2904	Glu-17 to Val-22, Val-29 to Asn-38, Gly-60 to Val-67, Gln-84 to Glu-93, Lys-106 to Leu-115, Gln-118 to Gln-123, Lys-152 to Val-159.	AR104: 1, AR033: 1, AR089: 1, AR053: 0, AR096: 0, AR061: 0, AR039: 0, AR052: 0, AR060: 0, AR055: 0 H0694: 29, H0703: 13, H0683: 10, H0717: 7, H0713: 6, H0542: 6, H0687: 4, H0656: 3, H0685: 2, H0716: 2, H0688: 2, H0695: 2, S0428: 2, H0689: 2, H0684: 2, H0521: 2, H0580: 1, H0601: 1, H0592: 1, H0708: 1, S0150: 1, H0699: 1, H0519: 1, H0709: 1, H0522: 1, H0555: 1,		

HOCQI51	1047483	730	3 - 1016	2905	Gln-15 to Phe-20, Ser-49 to Tyr-54, Glu-111 to Glu-121, Arg-185 to Asp-190, Phe-206 to Asp-212, Glu-309 to Pro-314.	S0028: 1, H0707: 1 and H0543: 1.	L0794: 8, H0556: 4, H0046: 4, L0809: 3, L0748: 3, H0341: 2, S0356: 2, S0046: 2, H0100: 2, L0769: 2, L0659: 2, S0328: 2, L0742: 2, H0422: 2, H0265: 1, T0002: 1, S0418: 1, S0420: 1, S0354: 1, S0045: 1, L0717: 1, H0549: 1, S0222: 1, H0586: 1, H0156: 1, T0110: 1, H0150: 1, S0051: 1, H0594: 1, H0266: 1, S0250: 1, H0604: 1, S0364: 1, H0634: 1, H0412: 1, H0494: 1, H0561: 1, H0695: 1, H0529: 1, L0761: 1, L0667: 1, L0772: 1, L0643: 1, L0764: 1, L0771: 1, L0768: 1, L0766: 1, L0803: 1, L0629: 1, L0368: 1, L0788: 1, H0690: 1, H0682: 1, H0660: 1, S0152: 1, S0404: 1,		

HOPKE15	1047634	731	3 - 434	2906	Met-18 to Tyr-45, Arg-56 to Thr-65, Gln-89 to Glu-107, Pro-109 to Ala-132.	L0747: 1, L0755: 1, H0445: 1 and H0542: 1.		
						H0046: 9, L0766: 8, L0731: 4, S0360: 3, S0408: 3, H0529: 3, L0769: 3, L0608: 3, H0543: 3, H0656: 2, H0341: 2, S0046: 2, S0010: 2, H0318: 2, H0616: 2, S0150: 2, S0002: 2, L0803: 2, L0659: 2, S0374: 2, H0684: 2, S0328: 2, L0750: 2, L0752: 2, L0759: 2, H0170: 1, S0134: 1, H0657: 1, H0637: 1, H0580: 1, H0486: 1, T0040: 1, T0109: 1, L0021: 1, H0575: 1, H0581: 1, H0052: 1, H0266: 1, H0188: 1, S0214: 1, H0328: 1, H0615: 1, H0428: 1, H0039: 1, H0553: 1, H0598: 1, H0163: 1, H0591: 1, H0038: 1, H0040: 1, T0067: 1, H0413: 1, S0464: 1, S0440: 1, L0598: 1, L0772: 1,		

						L0800: 1, L0764: 1, L0773: 1, L0648: 1, L0768: 1, L0774: 1, L0775: 1, L0382: 1, L0792: 1, L0666: 1, H0520: 1, S0126: 1, H0682: 1, H0648: 1, H0539: 1, S0378: 1, S0380: 1, S0152: 1, H0521: 1, H0696: 1, H0214: 1, S0406: 1, S0027: 1, L0751: 1, L0777: 1, L0755: 1, L0758: 1, S0031: 1, L0480: 1, L0596: 1, L0592: 1, H0653: 1, H0667: 1, S0192: 1, H0542: 1 and H0422: 1.		
HMAEL73	1047646	732	748 - 2463	2907	Pro-41 to Gln-47, Thr-169 to Glu-174, Gly-252 to Glu-259, Pro-343 to Ser-348, Asn-379 to Ala-384, His-425 to Glu-432, Asn-505 to Asn-511, Arg-516 to Phe-522.	L0758: 6, L0731: 4, L0747: 3, S0342: 2, L0769: 2, L0768: 2, L0749: 2, L0615: 1, H0686: 1, H0125: 1, S0418: 1, S0354: 1, S0358: 1, S0360: 1, S0222: 1, H0613: 1, H0004: 1, H0510: 1, S6028: 1, H0615: 1, H0039: 1, H0494: 1, S0144: 1, L0762: 1,		

						L0388: 1, L0775: 1, L0789: 1, H0689: 1, H0435: 1, H0648: 1, S0152: 1, L0744: 1, L0745: 1, L0755: 1 and H0423: 1.		
HNOKE42	1047663	733	2 - 445	2908	Arg-1 to Tyr-7, Arg-17 to Arg-23, Glu-40 to Phe-45, Thr-64 to Tyr-71, Arg-117 to Glu-127, Arg-141 to Ser-148.	H0551: 4, H0494: 4, H0561: 3, H0529: 3, H0521: 3, H0486: 2, L0471: 2, H0373: 2, H0510: 2, H0687: 2, H0553: 2, H0708: 2, H0560: 2, H0509: 2, L0794: 2, L0774: 2, H0547: 2, H0519: 2, H0539: 2, L0439: 2, L0754: 2, L0777: 2, H0685: 1, S0282: 1, S0418: 1, H0637: 1, H0485: 1, H0156: 1, H0530: 1, T0010: 1, S6028: 1, T0023: 1, H0212: 1, T0042: 1, L0763: 1, L0637: 1, L0768: 1, L0805: 1, L0530: 1, L0787: 1, S0148: 1, H0435: 1, H0670: 1, H0660: 1, H0710: 1, H0518: 1, H0522: 1, H0704: 1,		

						S0176: 1, L0748: 1, L0749: 1, L0731: 1 and L0758: 1.		
HOFAE31	1047670	734	2 - 220	2909	Glu-1 to Leu-8, Arg-38 to Cys-49.	H0414: 2		
HCLCX62	1047716	735	129 - 437	2910	Ala-1 to Leu-7, Ser-18 to Lys-23.	S0136: 25, L0665: 4, S0001: 1, H0662: 1, H0632: 1, H0594: 1, H0188: 1, H0598: 1, H0379: 1, S0294: 1, L0764: 1, L0521: 1, L0803: 1, L0805: 1, L0493: 1, L0514: 1, L0515: 1, L0659: 1, H0689: 1, H0683: 1, H0670: 1, H0672: 1, S0328: 1, H0539: 1, H0478: 1, L0777: 1, L0731: 1 and L0599: 1.		
HNOAC93	1047820	736	826 - 554	2911	Pro-12 to Pro-20, Leu-24 to Ser-31, Pro-34 to Pro-82, Arg-84 to Pro-91.	AR053: 18, AR089: 16, AR096: 15, AR033: 14, AR039: 12, AR060: 11, AR104: 11, AR055: 10, AR061: 6 H0251: 6, H0412: 2, H0295: 1, S0114: 1, H0657: 1, H0255: 1, H0663: 1, H0619: 1, S0222: 1, H0392: 1, H0333: 1, H0486: 1,	16p13.3	141750, 141800, 141800, 141800, 141800, 141850, 141850, 141850, 141850, 156850,

					H0635: 1, H0318: 1, H0050: 1, H0051: 1, S0388: 1, S0051: 1, H0239: 1, H0688: 1, H0644: 1, H0181: 1, H0617: 1, H0606: 1, S0438: 1, L0769: 1, L0761: 1, L0803: 1, H0547: 1, S0126: 1, H0658: 1, H0672: 1, H0651: 1, S0404: 1, S0406: 1, H0436: 1, L0748: 1, L0751: 1 and S0276: 1.		186580, 191092, 600140, 600273, 601313, 601785
HMEJA45	1047848	737	1 - 399	2912	Phe-4 to Arg-11, Ala-16 to Ser-22, Cys-31 to Cys-39.	AR060: 5, AR061: 3, AR104: 3, AR089: 3, AR096: 2, AR055: 2 S0206: 5, H0413: 3, S0028: 3, H0170: 2, S0212: 2, H0546: 2, H0266: 2, H0171: 1, S0040: 1, H0580: 1, H0208: 1, H0411: 1, H0437: 1, H0453: 1, H0427: 1, H0051: 1, S0051: 1, H0355: 1, S0003: 1, H0031: 1, H0412: 1, S0188: 1, S0390: 1, S3014: 1, S0027: 1 and S0031: 1.		

HLDAS11	1047937	738	224 - 958	2913	Asn-33 to Glu-41, Ala-58 to Ser-69, Ser-77 to Pro-84, Pro-97 to Pro-102, Ile-121 to Gln-128.	H0693: 636, H0637: 29, H0551: 16, L0748: 11, L0777: 7, H0069: 5, L0666: 4, L0157: 3, H0641: 3, L0766: 3, L0665: 3, L0758: 3, H0510: 2, H0615: 2, H0509: 2, L0663: 2, H0521: 2, L0751: 2, L0755: 2, H0542: 2, H0650: 1, H0657: 1, S0356: 1, S0376: 1, S0360: 1, H0431: 1, H0013: 1, H0618: 1, S0010: 1, H0581: 1, T0001: 1, H0052: 1, H0251: 1, H0596: 1, H0373: 1, H0083: 1, H0271: 1, S0250: 1, S0003: 1, S0214: 1, H0622: 1, H0553: 1, H0674: 1, H0038: 1, H0040: 1, H0272: 1, H0059: 1, T0041: 1, H0646: 1, L0598: 1, L0662: 1, L0768: 1, L0649: 1, L0774: 1, L0805: 1, L0776: 1, L0657: 1, L0517: 1, L0382: 1, L0791: 1,		

						H0144: 1, S0126: 1, H0690: 1, H0658: 1, H0648: 1, S0152: 1, S0146: 1, L0743: 1, L0439: 1, L0754: 1, L0749: 1, S0260: 1 and L0366: 1.			
HWMJB31	1048009	739	202 - 732	2914	Ile-1 to Thr-7, Glu-16 to Glu-33, Leu-37 to Ala-46, Leu-69 to Glu-80, Tyr-89 to Gln-111, Ser-121 to Cys-128, Pro-135 to Glu-156, Glu-162 to Thr-177.	S0358: 1			
HAZAA31	1048188	740	1480 - 185	2915		L0593: 16, L0591: 12, H0543: 9, L0667: 8, L0751: 8, H0581: 7, H0457: 7, H0617: 7, L0659: 7, S0418: 6, S0046: 6, H0494: 6, S0206: 6, S0116: 5, H0341: 5, H0402: 5, S0222: 5, H0271: 5, L0766: 5, H0521: 5, S0027: 5, L0740: 5, L0749: 5, L0595: 5, S0360: 4, H0486: 4, S0280: 4, H0024: 4, H0551: 4, L0372: 4,	3p14.3	150250, 164500, 277730, 600971, 601226	

		L0666: 4, H0519: 4, H0542: 4, H0656: 3, S0420: 3, S0356: 3, S0045: 3, H0052: 3, H0545: 3, H0050: 3, H0620: 3, S0051: 3, H0553: 3, H0135: 3, T0042: 3, L0475: 3, S0344: 3, L0769: 3, L0654: 3, L0663: 3, H0520: 3, S3014: 3, L0439: 3, L0777: 3, S0192: 3, S0424: 3, H0265: 2, H0556: 2, S0040: 2, H0657: 2, H0484: 2, S0376: 2, H0580: 2, S0007: 2, H0333: 2, H0575: 2, T0048: 2, H0421: 2, S0049: 2, H0046: 2, L0041: 2, H0266: 2, H0615: 2, L0483: 2, H0087: 2, H0413: 2, H0059: 2, H0561: 2, H0509: 2, L0771: 2, L0649: 2, L0775: 2, L0375: 2, L0809: 2, L0665: 2, H0144: 2, L0565: 2, L0438: 2, H0658: 2, H0555: 2,				

		S0037: 2, L0741: 2, L0748: 2, L0754: 2, L0745: 2, L0757: 2, L0758: 2, H0445: 2, L0596: 2, L0599: 2, L0601: 2, T0002: 1, H0686: 1, S0402: 1, H0294: 1, T0049: 1, S0212: 1, S0001: 1, H0483: 1, H0669: 1, H0661: 1, H0663: 1, H0662: 1, H0306: 1, S0442: 1, S0358: 1, H0637: 1, S0140: 1, H0619: 1, H0393: 1, L0717: 1, S0278: 1, H0611: 1, H0610: 1, H0357: 1, H0613: 1, H0592: 1, H0497: 1, H0559: 1, H0256: 1, H0013: 1, H0427: 1, S0010: 1, S0346: 1, S0182: 1, H0318: 1, S0474: 1, H0172: 1, H0123: 1, L0471: 1, S0388: 1, T0010: 1, H0179: 1, H0687: 1, H0288: 1, H0284: 1, H0252: 1, H0428: 1, H0628: 1, H0181: 1,				

						H0606: 1, L0055: 1, H0124: 1, H0090: 1, H0040: 1, T0067: 1, H0412: 1, H0100: 1, H0560: 1, H0130: 1, H0647: 1, H0646: 1, S0142: 1, S0210: 1, S0002: 1, H0529: 1, L0535: 1, L0770: 1, L0638: 1, L0796: 1, L0637: 1, L0643: 1, L0374: 1, L0764: 1, L0773: 1, L0662: 1, L0768: 1, L0774: 1, L0378: 1, L0658: 1, L0383: 1, L0382: 1, L0791: 1, L0664: 1, S0126: 1, H0689: 1, H0690: 1, H0682: 1, H0435: 1, H0670: 1, H0660: 1, H0666: 1, L0355: 1, S0378: 1, L0602: 1, H0134: 1, H0436: 1, L0750: 1, L0755: 1, S0031: 1, S0436: 1, L0608: 1, S0026: 1, H0653: 1, H0665: 1, H0667: 1, H0217: 1 and H0352: 1.		
HOCMC83	1048300	741	56 - 1465	2916	Gln-116 to Trp-124,	H0253: 8, H0618: 6,		

				Glu-154 to Glu-161, Glu-270 to Asn-278, Glu-360 to Trp-371, Asp-440 to Asp-445, Ser-450 to Leu-456.	L0758: 5, L0766: 4, H0620: 3, H0038: 3, L0794: 3, S0358: 2, H0687: 2, H0135: 2, L0508: 2, L0809: 2, L0787: 2, L0665: 2, H0520: 2, L0439: 2, H0650: 1, H0657: 1, S0222: 1, H0574: 1, H0318: 1, H0581: 1, S0049: 1, H0545: 1, H0566: 1, H0622: 1, H0033: 1, H0181: 1, H0617: 1, H0165: 1, H0264: 1, H0059: 1, L0564: 1, H0561: 1, S0150: 1, H0647: 1, L0769: 1, L0644: 1, L0768: 1, L0774: 1, L0375: 1, L0806: 1, L0509: 1, L0514: 1, L0510: 1, L0789: 1, L0438: 1, H0435: 1, H0660: 1, H0648: 1, H0696: 1, H0436: 1, H0627: 1 and L0731: 1.			
HCFCS40	1048427	742	2 - 1330	2917	Leu-21 to Gly-27, Pro-73 to Leu-83.	AR060: 241, AR033: 229, AR055: 211, AR061: 142, AR089: 103, AR053: 85,	3p21.3	116806, 120120, 120120, 120120,	

					AR052: 62, AR104: 48, AR096: 33, AR039: 25 S0474: 21, H0683: 7, L0748: 7, H0251: 6, L0777: 5, S0422: 4, L0764: 4, L0766: 4, L0740: 4, L0754: 4, S0418: 3, H0046: 3, H0553: 3, H0521: 3, L0779: 3, L0752: 3, L0731: 3, L0757: 3, H0422: 3, H0713: 2, H0717: 2, H0733: 2, S0476: 2, H0441: 2, H0575: 2, H0428: 2, H0494: 2, L0659: 2, L0666: 2, H0547: 2, H0519: 2, L0439: 2, L0745: 2, L0749: 2, L0756: 2, L0758: 2, L0485: 2, S0026: 2, S0384: 2, H0716: 1, S0212: 1, H0661: 1, S0356: 1, S0444: 1, S0045: 1, S0046: 1, S0132: 1, H0645: 1, H0406: 1, S6022: 1, H0431: 1, H0587: 1, H0486: 1, T0040: 1,	120436, 120436, 120436, 138320, 168468, 182280, 600163

HVCAA65	1048595	743	1042 - 212	2918	Trp-1 to Gly-10, Gly-22 to Gly-29, Leu-82 to Val-88, Ala-116 to His-123,	H0013: 1, H0069: 1, H0156: 1, H0098: 1, H0581: 1, H0150: 1, H0024: 1, H0083: 1, S0025: 1, H0355: 1, H0328: 1, H0031: 1, H0124: 1, T0067: 1, H0413: 1, H0623: 1, H0560: 1, L0769: 1, L0667: 1, L0372: 1, L0767: 1, L0803: 1, L0804: 1, L0774: 1, L0775: 1, L0375: 1, L0784: 1, L0655: 1, L0657: 1, L0783: 1, L0647: 1, L5622: 1, L5623: 1, L0664: 1, H0697: 1, S0374: 1, H0724: 1, H0520: 1, H0435: 1, H0710: 1, H0518: 1, S0152: 1, L0751: 1, L0759: 1, S0031: 1, H0445: 1, S0434: 1, S0436: 1, S0192: 1, S0424: 1 and L0600: 1.	S0440: 12, H0543: 11, H0341: 7, L0775: 6, L0591: 6, L0770: 5, L0766: 5, L0750: 5,	

					Lys-144 to Phe-156, Phe-167 to Thr-181, Glu-202 to Asp-207, Glu-262 to Ser-277.	L0759: 5, L0588: 5, H0542: 5, S0360: 4, S0045: 4, H0486: 4, H0012: 4, S0372: 4, S0144: 4, L0755: 4, L0731: 4, L0758: 4, L0596: 4, S0114: 3, H0657: 3, S0132: 3, H0640: 3, H0545: 3, H0266: 3, H0413: 3, H0494: 3, L0598: 3, H0529: 3, L0521: 3, L0364: 3, L0657: 3, L0783: 3, L0809: 3, L0666: 3, L0665: 3, H0547: 3, H0519: 3, S0126: 3, H0659: 3, H0670: 3, L0777: 3, S0436: 3, L0595: 3, H0395: 2, H0265: 2, T0049: 2, H0484: 2, H0402: 2, H0125: 2, S0418: 2, S0408: 2, S0410: 2, H0580: 2, T0109: 2, H0575: 2, H0581: 2, H0546: 2, H0373: 2, H0510: 2, H0708: 2, H0412: 2, H0396: 2, L0763: 2, L0769: 2, L0774: 2,		

		L0805: 2, L0653: 2, L0776: 2, L0655: 2, L0513: 2, L0656: 2, L0558: 2, L0517: 2, H0666: 2, H0672: 2, S0328: 2, S0044: 2, S0406: 2, L0751: 2, L0747: 2, L0757: 2, L0597: 2, L0581: 2, L0599: 2, L0604: 2, S0026: 2, H0653: 2, H0422: 2, H0506: 2, H0556: 1, T0002: 1, H0686: 1, H0295: 1, H0583: 1, H0650: 1, S0298: 1, H0483: 1, H0305: 1, S0420: 1, S0356: 1, H0675: 1, S0046: 1, S6022: 1, H0432: 1, H0392: 1, H0586: 1, H0497: 1, H0333: 1, H0331: 1, H0250: 1, S0280: 1, L0021: 1, H0599: 1, H0042: 1, T0082: 1, S0010: 1, T0048: 1, H0052: 1, H0597: 1, L0738: 1, H0178: 1, H0123: 1, H0081: 1, L0471: 1, H0620: 1,				

HSPSI76	1048635	744	85 - 1578	2919	Phe-1 to Pro-12, Asp-182 to Pro-188,	S0250: 4, H0551: 4, S0360: 3, H0013: 3, H0071: 1, H0355: 1, H0687: 1, S0022: 1, H0039: 1, T0006: 1, H0031: 1, H0628: 1, H0135: 1, H0038: 1, H0087: 1, H0264: 1, T0042: 1, S0016: 1, H0560: 1, H0509: 1, H0633: 1, H0649: 1, S0142: 1, S0344: 1, S0208: 1, S0422: 1, L0520: 1, L0762: 1, L3904: 1, L0667: 1, L0771: 1, L0768: 1, L0381: 1, L0784: 1, L0652: 1, L0559: 1, L0636: 1, L0540: 1, L0518: 1, L0384: 1, S0374: 1, H0723: 1, H0690: 1, H0660: 1, H0648: 1, S0380: 1, S0152: 1, H0521: 1, H0522: 1, H0555: 1, S0392: 1, S0027: 1, S0028: 1, S0206: 1, L0743: 1, L0779: 1, L0780: 1, L0753: 1, H0707: 1 and H0712: 1.	5q31	121050, 131400,

					Arg-215 to Tyr-224, Gly-240 to Lys-247, Pro-279 to Gly-286, Leu-295 to Glu-308, Pro-326 to Tyr-331, Thr-343 to Arg-349, Tyr-354 to Ala-360, Lys-369 to Asp-375, Ser-426 to Asp-432.	H0295: 2, H0628: 2, L0776: 2, S3014: 2, L0439: 2, S0212: 1, S0418: 1, S0420: 1, H0734: 1, S0046: 1, S0476: 1, H0497: 1, T0040: 1, H0544: 1, H0545: 1, H0024: 1, S0003: 1, H0644: 1, H0038: 1, H0040: 1, H0413: 1, S0294: 1, H0633: 1, S0144: 1, L0372: 1, L0805: 1, L0654: 1, L5623: 1, L4501: 1, H0144: 1, L0438: 1, S0126: 1, H0683: 1, H0672: 1, H0539: 1, H0521: 1, H0631: 1, S0037: 1, S0434: 1, L0588: 1, L0599: 1, L0601: 1 and H0665: 1.		138040, 153455, 159000, 179095, 181460, 192974, 192974, 600807, 601596, 601692, 601692, 601692, 601692, 602089, 602121, 602460
HVVCH35	1048658	745	1107 - 91	2920	Ser-45 to Pro-51.	L0769: 5, L0759: 4, H0402: 3, S0376: 3, H0424: 3, L0749: 3, S0222: 2, L0535: 2, L0774: 2, L0806: 2, L0384: 2, L0666: 2, H0265: 1, S0218: 1, H0484: 1, S0354: 1,	22q13.33	

HOFNI66	1048739	746	3 - 710	2921	Thr-1 to Asp-9, Gly-18 to Ser-24, Asn-35 to Arg-42, Trp-49 to Asp-62, Ser-69 to Ala-74, Arg-155 to Trp-167,	S0444: 1, S0360: 1, S0007: 1, H0392: 1, H0559: 1, H0486: 1, T0039: 1, T0060: 1, L0021: 1, H0004: 1, H0581: 1, H0052: 1, H0194: 1, H0204: 1, H0024: 1, H0405: 1, H0617: 1, H0606: 1, H0090: 1, H0272: 1, H0494: 1, S0438: 1, S0422: 1, S0002: 1, L0770: 1, L0772: 1, L0372: 1, L0641: 1, L0645: 1, L0771: 1, L0768: 1, L0794: 1, L0381: 1, L0775: 1, L0789: 1, H0547: 1, H0659: 1, H0658: 1, H0672: 1, H0521: 1, S0406: 1, H0727: 1, L0744: 1, L0779: 1, L0758: 1, H0445: 1, H0423: 1 and H0422: 1.	L0740: 10, L0752: 9, L0748: 8, S0422: 6, S0440: 5, L0666: 5, L0754: 5, S0360: 4, H0327: 4, L0771: 4, L0438: 4, S0126: 4,		

					Leu-173 to Tyr-180, Arg-190 to Ala-197.	S0406: 4, L0779: 4, L0596: 4, S0444: 3, T0109: 3, H0575: 3, S0003: 3, L0805: 3, L0776: 3, L0809: 3, L0664: 3, L0665: 3, S0328: 3, H0696: 3, L0439: 3, L0755: 3, L0731: 3, H0543: 3, H0657: 2, H0662: 2, S0420: 2, S0356: 2, S0358: 2, S0408: 2, S0007: 2, H0415: 2, S0010: 2, H0046: 2, H0014: 2, H0083: 2, H0032: 2, H0674: 2, H0708: 2, H0090: 2, H0038: 2, H0272: 2, H0429: 2, H0494: 2, S0372: 2, S0438: 2, H0509: 2, L0598: 2, L0766: 2, L0649: 2, L0774: 2, L0775: 2, L0543: 2, L5622: 2, L0663: 2, H0144: 2, S0378: 2, L0602: 2, H0522: 2, S0028: 2, L0758: 2, L0588: 2, L0599: 2, S0026: 2, S0424: 2, H0170: 1,		

		L0615: 1, H0717: 1, S0114: 1, S0116: 1, H0341: 1, S0212: 1, H0663: 1, H0458: 1, S0354: 1, S0376: 1, H0580: 1, H0730: 1, H0733: 1, S0045: 1, S0046: 1, H0619: 1, H0393: 1, L0717: 1, H0351: 1, H0369: 1, H0549: 1, H0431: 1, H0409: 1, H0586: 1, H0587: 1, H0574: 1, H0632: 1, H0486: 1, T0039: 1, L0586: 1, T0060: 1, H0250: 1, H0635: 1, H0156: 1, H0042: 1, H0274: 1, T0048: 1, H0581: 1, H0421: 1, H0251: 1, L0040: 1, H0545: 1, H0009: 1, H0123: 1, H0373: 1, S0214: 1, H0328: 1, H0031: 1, H0553: 1, H0598: 1, H0534: 1, H0135: 1, H0591: 1, H0616: 1, H0063: 1, H0264: 1, H0412: 1, H0059: 1, H0100: 1, L0475: 1,				

						H0560: 1, H0561: 1, S0352: 1, S0382: 1, S0150: 1, S0344: 1, S0210: 1, L0763: 1, L0769: 1, L0638: 1, L0637: 1, L5565: 1, L0772: 1, L0372: 1, L0800: 1, L0648: 1, L0662: 1, L0767: 1, L0768: 1, L0806: 1, L0655: 1, L0629: 1, L0658: 1, L0517: 1, L0526: 1, L0529: 1, L0532: 1, H0698: 1, H0520: 1, H0547: 1, H0519: 1, H0690: 1, H0682: 1, H0659: 1, H0658: 1, H0670: 1, H0539: 1, S0380: 1, S0152: 1, H0521: 1, H0704: 1, H0478: 1, S3014: 1, S0032: 1, L0749: 1, L0750: 1, L0756: 1, L0757: 1, H0445: 1, S0434: 1, L0608: 1, H0668: 1, S0194: 1 and H0423: 1.		
HMSKI90	1048792	747	1432 - 1770	2922		AR096: 4, AR089: 4, AR060: 2, AR033: 2, AR104: 2, AR061: 1,		

						AR053: 0, AR055: 0, AR039: 0 H0171: 1, S0444: 1 and S0002: 1.		
HSYBI49	1049151	748	2 - 805	2923		AR089: 15, AR096: 14, AR060: 12, AR039: 10, AR104: 8, AR053: 8, AR055: 4, AR033: 4, AR061: 3, AR052: 2 L0777: 17, H0521: 11, L0747: 6, L0649: 5, H0586: 4, L0664: 4, L0748: 4, L0749: 4, H0661: 3, S0132: 3, H0587: 3, H0509: 3, L0637: 3, L0662: 3, L0806: 3, L0665: 3, L0779: 3, S0358: 2, L0717: 2, T0040: 2, H0014: 2, H0494: 2, S0438: 2, L0451: 2, H0547: 2, H0435: 2, H0658: 2, H0648: 2, H0672: 2, L0602: 2, S0436: 2, H0543: 2, L0448: 1, S0476: 1, H0431: 1, H0592: 1, T0114: 1, L0021: 1, T0010: 1, H0188: 1,		

					T0023: 1, L0483: 1, H0551: 1, S0352: 1, H0633: 1, L0763: 1, L0761: 1, L0646: 1, L0648: 1, L4500: 1, L5568: 1, L0774: 1, L0775: 1, L0525: 1, L0653: 1, L0657: 1, H0690: 1, H0684: 1, S0378: 1, H0479: 1, L0754: 1, L0755: 1, L0759: 1, L0362: 1 and S0242: 1.		
HTXSN37	1049372	749	1061 - 1864	2924	Thr-34 to Glu-47, Pro-82 to Ser-104, His-120 to Asn-126, His-129 to Pro-152, Cys-214 to Lys-220, Lys-261 to Ser-268.	S0422: 31, L0748: 16, L0803: 12, H0580: 11, H0615: 10, L0754: 9, L0596: 9, S0360: 8, L0805: 8, L0779: 8, L0663: 7, L0745: 7, S0358: 6, H0271: 6, L0766: 6, L0809: 6, S0406: 6, L0777: 6, S0007: 5, H0046: 5, H0024: 5, L0770: 5, L0761: 5, L0771: 5, L0662: 5, L0657: 5, L0666: 5, H0710: 5, H0436: 5, L0750: 5, H0542: 5, S0444: 4, H0547: 4, S0476: 4,		

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HMUBT31	1049466	750	2 - 1429	2925	Lys-45 to Asp-54, Thr-56 to Leu-63, Gln-227 to Thr-241, Glu-287 to Val-292, Gln-331 to Gly-337, Glu-402 to Asp-411, Glu-436 to Cys-441, Glu-454 to Glu-461.	L0605: 28, L0754: 9, S0003: 6, L0803: 6, L0777: 5, L0759: 4, L0770: 3, L0663: 3, H0683: 3, L0439: 3, L0756: 3, L0599: 3, S0026: 3, H0171: 2, S0418: 2, H0587: 2, H0050: 2, L0483: 2, H0032: 2, H0591: 2, H0413: 2, L0772: 2, L0768: 2, L0649: 2, L0659: 2, L0666: 2, H0547: 2, H0519: 2, H0670: 2, S0380: 2,		

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HFPDQ90	1049644	751	456 - 202	2926	Asp-74 to His-85.	S0134: 1, S0222: 1, L0774: 1, L0776: 1 and L0366: 1.	5q31	121050, 131400, 138040, 153455, 159000, 179095, 181460, 192974, 192974, 600807, 601596, 601692, 601692, 601692, 601692, 602089, 602121, 602460
HVVCB79	1050102	752	195 - 1205	2927	Glu-29 to Cys-39, Val-46 to Ser-52, Asn-58 to Gly-65, Cys-68 to His-82, Tyr-84 to Gly-94,	L0659: 19, S0476: 18, H0271: 18, S0152: 15, H0521: 12, L0666: 7, S0132: 6, H0494: 5, L0754: 5, L0601: 5,	10q24	157640, 174900, 180250, 186770, 236730,

				Leu-122 to Trp-138, Ala-158 to Leu-170, Gly-175 to Arg-182, Tyr-203 to Ser-210, Gly-246 to Met-258, Arg-288 to Gln-296.	S0360: 4, L0771: 4, L0653: 4, L0751: 4, H0295: 3, H0486: 3, H0635: 3, H0416: 3, H0615: 3, L0662: 3, S0428: 3, L0748: 3, L0747: 3, L0731: 3, H0661: 2, S0376: 2, H0437: 2, H0587: 2, H0485: 2, T0039: 2, H0318: 2, H0545: 2, H0620: 2, H0266: 2, H0090: 2, H0623: 2, L0763: 2, L0646: 2, L0642: 2, L0774: 2, L0775: 2, L0378: 2, L0806: 2, L0664: 2, S0374: 2, H0519: 2, S0406: 2, L0439: 2, L0779: 2, L0755: 2, L0604: 2, L0698: 2, H0149: 1, H0686: 1, H0713: 1, S0212: 1, H0255: 1, S0408: 1, H0637: 1, S0046: 1, H0411: 1, S0278: 1, H0599: 1, H0251: 1, H0457: 1, H0024: 1, H0014: 1, H0328: 1, H0553: 1, H0644: 1,	271245, 278000, 278000, 600095, 600512, 601107, 601130, 602082

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HDPGR19	1050167	753	2 - 670	2928	Ala-32 to Arg-48, Cys-138 to Ser-147, Lys-161 to Glu-166, Pro-179 to Asn-189.	AR055: 2, AR033: 1, AR089: 1, AR060: 1, AR096: 1, AR039: 0, AR061: 0, AR052: 0, AR053: 0 H0521: 36, L0754: 20, L0748: 13, L0740: 12, L0439: 9, S0440: 8, H0522: 8, L0777: 8, H0580: 7, H0641: 7, L0659: 7, S0126: 7, S0436: 7, H0638: 6,		

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HVVDX63	1050256	754	2483 - 1299	2929	Ala-1 to Ser-19, Gln-50 to Ala-69, Lys-113 to Lys-120, Thr-132 to Trp-147, Glu-162 to Gly-172, Leu-185 to Ser-219, Thr-226 to Tyr-234, Pro-288 to Pro-304, Glu-312 to Lys-324, Cys-344 to Gly-355.	H0556: 10, L0758: 9, L0777: 7, H0422: 7, H0271: 6, H0265: 5, H0179: 5, H0634: 5, L0747: 5, L0766: 4, L0664: 4, L0751: 4, H0542: 4, H0423: 4, H0657: 3, S0476: 3, H0069: 3, H0641: 3, L0761: 3, H0555: 3, H0436: 3, L0757: 3, H0222: 2, S0132: 2, H0486: 2, H0553: 2, H0551: 2, L0631: 2, L0769: 2, L0667: 2, L0772: 2, L0662: 2, L0378: 2, L0809: 2, S0052: 2, H0658: 2, H0672: 2, S0328: 2, H0518: 2, L0749: 2, L0750: 2, H0445: 2, L0596: 2, L0362: 2, H0653: 2, H0220: 1, H0713: 1, S0218: 1,		

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HNOJA87	1050282	755	616 - 2415	2930	Ser-35 to Glu-40, Leu-43 to Lys-63, Gln-88 to Tyr-97, Gln-156 to Glu-161, Val-218 to Phe-223, Ser-229 to Cys-237, Phe-323 to Ala-332, Phe-334 to Ser-339, Glu-357 to Gly-362, Ser-382 to Pro-391, Ser-403 to His-411, Asp-414 to Leu-425, Pro-429 to Arg-444, Ser-481 to Asn-486, Asp-495 to Lys-503, Asn-508 to Leu-514, Lys-528 to Ser-544, Asp-565 to Tyr-576, Leu-578 to Gly-584, Lys-591 to Asn-600.	L0758: 8, L0439: 7, S0003: 6, L0602: 6, L0665: 5, S0330: 5, H0521: 5, L0755: 5, L0731: 5, L0483: 4, L0598: 4, L0766: 4, L0775: 4, L0666: 4, L0748: 4, H0423: 4, H0170: 3, H0580: 3, H0441: 3, H0687: 3, S0022: 3, L0659: 3, H0144: 3, H0547: 3, L0740: 3, L0751: 3, L0596: 3, H0411: 2, H0250: 2, S0280: 2, H0575: 2, H0051: 2, H0083: 2, H0031: 2, UNKWN: 2, L0763: 2, L0776: 2, L0664: 2, S0148: 2, L0438: 2, H0660: 2, S0328: 2, S0380: 2, L0747: 2, L0777: 2, L0590: 2, L0592: 2, L0581: 2, L0594: 2, L0362: 2, S0194: 2, H0624: 1, T0002: 1, H0140: 1, H0685: 1, S0040: 1, L0731: 1, S0196: 1 and H0506: 1.	2q31	100690, 120180, 120180, 120180, 120180, 120190, 142989, 156232, 178600, 266100, 600258, 600321

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HTPGI65	1050419	756	56 - 1273	2931	Ser-55 to Thr-60, Glu-97 to Ser-103, Thr-164 to Glu-170, Gly-192 to Gly-197, Leu-204 to Ser-218, Ala-238 to Ser-250, Asp-265 to Tyr-292, Gly-298 to Gly-307, Gly-351 to Met-359, Phe-389 to Glu-400.	S0444: 13, L0751: 12, S0358: 11, L0659: 11, S0436: 10, S0442: 8, S0410: 8, S0406: 8, S0434: 8, L0662: 6, H0435: 6, S0440: 5, L0657: 5, S0354: 4, T0023: 4, L0764: 4, L0771: 4, L0666: 4, H0690: 4, L0743: 4, L0754: 4, L0601: 4, H0046: 3, H0615: 3, H0617: 3, H0032: 3, H0647: 3, L0372: 3, L0665: 3, H0593: 3, L0744: 3, L0748: 3, H0663: 2, S0376: 2, S0408: 2, H0036: 2, H0622: 2, L0483: 2,	1q32.2	

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HHFGN14	1050536	757	1791 - 2738	2932	Pro-7 to Ala-17, Pro-28 to Gln-38, Asp-58 to Ser-78, Phe-113 to Asp-120, Tyr-171 to Glu-177, Gln-237 to Gln-246.	S0280: 3, H0581: 3, H0622: 3, H0690: 3, L0751: 3, H0506: 3, S0356: 2, H0670: 2, H0254: 1, S0046: 1, H0411: 1, H0438: 1, H0600: 1, H0632: 1, H0635: 1, H0599: 1, H0009: 1, H0050: 1, H0023: 1, T0010: 1, H0375: 1, H0687: 1, H0039: 1, S0364: 1, H0509: 1, L0527: 1, S0052: 1, H0693: 1, L0438: 1, H0593: 1, H0689: 1, H0660: 1, S0378: 1, H0555: 1, S0392: 1, S0390: 1, S0037: 1 and S0196: 1.	12q13	107777, 123940, 139350, 139350, 148040, 148041, 148043, 148070, 231550, 600194, 600231, 600536, 600808, 600956, 601284, 601769, 601769, 601928, 602116, 602153	
HTAIN76	1050553	758	83 - 1300	2933	Pro-19 to Ala-25, Pro-30 to Gly-50, Arg-66 to Gly-78.	L0740: 12, L0653: 6, L0665: 6, H0150: 5, L0439: 5, H0688: 4, L0771: 4, L0659: 4,		

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HLYBO89	1050702	759	3 - 557	2934	Pro-1 to Thr-10, Ser-25 to Ile-46, Glu-76 to Ile-82, Ile-89 to Gly-95, Lys-109 to Glu-118, Asp-127 to Gly-132, Glu-148 to Leu-155, Glu-161 to Glu-172.	AR089: 11, AR104: 9, AR060: 6, AR096: 3, AR061: 3, AR055: 2 L0803: 7, H0024: 5, L0805: 5, L0750: 5, S0026: 5, H0208: 3, S0440: 3, L0769: 3, S0126: 3, H0670: 3, S0330: 3, S0152: 3, H0411: 2, S0222: 2, S0010: 2, H0046: 2,	Xq28		

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HMEKJ82	1050767	760	1 - 597	2935	Arg-10 to Lys-24, Phe-50 to Arg-57.	AR089: 2, AR096: 1, AR104: 1, AR060: 0, AR061: 0, AR055: 0 S0414: 6, L0754: 6, L0803: 4, H0032: 3, L0774: 3, L0665: 3, L0752: 3, S0418: 2, L0005: 2, H0580: 2, H0431: 2, H0553: 2, H0673: 2, S0422: 2, L0598: 2, L0666: 2, L0748: 2, S0436: 2, L0589: 2, L0603: 2, S0001: 1, L0717: 1, H0415: 1, H0013: 1, H0635: 1, S0280: 1, H0581: 1, S0051: 1, H0266: 1, S0214: 1, H0428: 1, H0598: 1, H0616: 1, S0438: 1,			

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HOFNX17	1050969	761	47 - 604	2936	Ile-13 to Gly-19, Thr-21 to Gln-28, Lys-38 to Ser-45, Glu-62 to Tyr-68, Val-72 to Gly-77, Pro-87 to Ser-93, Thr-117 to Gln-126, Gln-133 to Leu-139.	H0415: 12, H0414: 2, H0355: 1 and H0517: 1.	9q11-q22	229600, 264300, 600542, 602014, 602088
HAOSY21	1051095	762	153 - 425	2937	Asn-26 to Gly-31, Cys-44 to Asp-50, Gln-85 to Glu-91.	H0657: 2, H0686: 1, H0341: 1, L0493: 1, H0144: 1, H0689: 1, L0757: 1 and L0596: 1.		
HMWDB39	1051115	763	2 - 598	2938	Ala-1 to Gly-7, Ser-20 to Gly-36, Glu-107 to Thr-112, Glu-114 to Pro-119.	S0474: 13, L0758: 13, L0439: 11, L0754: 11, L0752: 10, H0581: 9, L0766: 9, L0740: 9, L0769: 8, H0423: 8, H0547: 7, L0750: 7,		

		L0777: 7, H0013: 6, H0445: 6, L0599: 6, L0005: 5, S0358: 5, S0360: 5, S0414: 5, H0575: 5, L0776: 5, S0126: 5, H0648: 5, H0521: 5, H0171: 4, H0583: 4, H0341: 4, S0212: 4, H0580: 4, H0619: 4, H0427: 4, S0010: 4, S0346: 4, H0046: 4, H0457: 4, H0551: 4, L0763: 4, L0794: 4, L0803: 4, L0666: 4, H0522: 4, L0759: 4, H0543: 4, H0663: 3, H0638: 3, S0442: 3, S0007: 3, S0222: 3, H0244: 3, S0003: 3, H0591: 3, H0040: 3, T0042: 3, S0142: 3, H0529: 3, L0770: 3, L0637: 3, L0771: 3, L0662: 3, L0774: 3, L0805: 3, L0655: 3, L0663: 3, L0664: 3, L0665: 3, H0659: 3, H0670: 3, S0330: 3, H0539: 3, S0152: 3, H0626: 3,		

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HAOSZ53	1051246	764	2 - 403	2939	Ala-3 to Arg-8, Asp-48 to Gly-64, Asp-101 to Ser-111.	L0751: 4, S0358: 3, L0740: 3, S0418: 2, S0376: 2, H0318: 2, H0623: 2, S0210: 2, L0438: 2, L0741: 2, L0439: 2, L0747: 2, H0506: 2, H0171: 1,		

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HSODP14	1051256	765	130 - 549	2940	Ala-10 to His-29.	H0596: 1, H0046: 1, H0032: 1 and H0595: 1.		

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HWLXZ72	1051319	766	2 - 199	2941	Pro-1 to Trp-12.	H0659: 4, L0747: 4, S0474: 3, L0777: 3, S0360: 2, L0653: 2, L0659: 2, L0756: 2, H0686: 1, H0449: 1, H0587: 1, H0413: 1, H0494: 1, S0002: 1, L0770: 1, L0662: 1, L0767: 1, L0803: 1, L0776: 1, L0655: 1, L0665: 1, L0757: 1 and S0194: 1.		
HUSGQ45	1051410	767	3 - 527	2942	Arg-17 to Gln-24, Tyr-39 to Tyr-47, Arg-50 to Leu-57, Lys-59 to Asn-66, Asn-78 to Val-91, Ser-94 to Ser-133, Thr-139 to Lys-175.	L0766: 4, H0090: 3, H0266: 2, H0529: 2, L0803: 2, L0774: 2, L0754: 2, L0747: 2, L0779: 2, L0759: 2, S0114: 1, H0583: 1, H0638: 1, S0356: 1, S0376: 1, H0676: 1, S0410: 1, H0580: 1, H0619: 1, S0222: 1, H0318: 1, H0373: 1, S0003: 1, H0328: 1, H0040: 1, H0616: 1, H0412: 1, L0772: 1, L0800: 1, L0789: 1,		

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HLDRA54	1051437	768	263 - 676	2943	Lys-46 to Gly-63, Ala-75 to Ser-82, Gly-87 to Thr-94, Arg-121 to Gly-126.	S0360: 10, S0440: 7, L0794: 7, L0662: 6, H0373: 5, L0666: 5, L0665: 5, H0423: 5, S0358: 4, H0486: 4, L0519: 4, L0663: 4, H0659: 4, S0330: 4, L0731: 4, H0422: 4, H0657: 3, L0471: 3, H0687: 3, H0553: 3, H0551: 3, L0598: 3, L0500: 3, L0770: 3, L0803: 3, L0775: 3, L0805: 3, L0659: 3, L0809: 3, H0710: 3, L0779: 3, L0777: 3, S0218: 2, H0341: 2, H0669: 2, H0662: 2, S0420: 2, H0580: 2, S0222: 2, T0039: 2, H0013: 2, H0251: 2, H0046: 2, H0457: 2,		

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HNOJR48	1051533	769	34 - 1377	2944		S0194: 1, H0542: 1, H0543: 1, S0384: 1 and H0506: 1.	6p21.3	106300, 108800, 120290, 120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261, 177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475
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HKIXH35	1051883	770	2 - 994	2945	Lys-7 to Glu-27, Ser-48 to Gln-53, Gln-58 to Pro-69, Ala-84 to Tyr-93, Ala-114 to Leu-127, Ser-173 to Arg-180, Met-188 to Pro-193, Pro-200 to Leu-205, Ile-228 to Asp-233, Gln-271 to Cys-281, Glu-289 to Cys-304.	L0748: 13, L0758: 5, L0749: 4, L0439: 3, H0441: 2, H0052: 2, H0090: 2, L0774: 2, L0775: 2, L0517: 2, L0666: 2, L0740: 2, L0731: 2, L0759: 2, S0134: 1, L0415: 1, H0318: 1, H0327: 1, H0563: 1, S0050: 1, H0594: 1, H0266: 1, H0252: 1, H0644: 1, H0135: 1, H0616: 1, H0264: 1, S0438: 1, L0369: 1, L0763: 1,		

HHEBJ92	1051903	771	67 - 2094	2946	His-152 to Lys-160, Gly-276 to Ser-281, Ser-376 to Asp-383, Arg-389 to Gly-400, Ala-512 to Ser-529, Asp-576 to Thr-581, Gly-619 to Asp-624.	L0796: 1, L0662: 1, L0804: 1, L0375: 1, L0787: 1, S0428: 1, H0593: 1, H0689: 1, H0436: 1, L0743: 1, L0754: 1 and L0603: 1.	AR089: 8, AR053: 6, AR060: 6, AR096: 5, AR039: 5, AR055: 4, AR104: 4, AR033: 4, AR061: 2, AR052: 0 H0717: 14, H0703: 14, H0699: 9, H0716: 8, H0685: 7, H0730: 7, H0688: 6, H0729: 5, H0687: 5, H0622: 4, H0424: 4, H0684: 4, H0670: 4, S0356: 3, S0376: 3, H0728: 3, L0163: 3, H0615: 3, H0039: 3, H0494: 3, H0724: 3, H0689: 3, H0683: 3, H0709: 3, H0694: 3, L0751: 3, H0624: 2, H0171: 2, H0686: 2, H0713: 2, H0663: 2, S0358: 2, H0722: 2, H0036: 2, H0100: 2, H0695: 2, H0725: 2, H0723: 2,	1q32	114208, 114208, 119300, 120620, 120620, 120920, 134370, 134370, 134370, 134580, 145260, 150310, 150310, 179820, 191045, 600105, 600759, 601494, 601975

		H0691: 2, H0521: 2, S0028: 2, L0744: 2, L0758: 2, S0031: 2, H0542: 2, H0664: 1, H0662: 1, S0354: 1, H0580: 1, S0132: 1, H0619: 1, H0261: 1, S6016: 1, S0222: 1, H0455: 1, H0333: 1, H0486: 1, H0194: 1, H0263: 1, H0597: 1, H0545: 1, H0046: 1, H0009: 1, H0050: 1, H0012: 1, H0051: 1, T0006: 1, H0213: 1, L0456: 1, H0038: 1, H0616: 1, H0551: 1, H0059: 1, S0038: 1, H0561: 1, L0761: 1, L0374: 1, L0771: 1, L0766: 1, L0776: 1, L0527: 1, L0666: 1, L0665: 1, S0052: 1, H0697: 1, H0698: 1, S0374: 1, H0726: 1, H0520: 1, H0690: 1, H0435: 1, H0660: 1, H0666: 1, H0539: 1, S0390: 1, S0206: 1, L0743: 1, L0748: 1,			

						L0740: 1, L0754: 1, L0779: 1, L0777: 1, L0731: 1, S0394: 1, S0460: 1 and H0677: 1.		
HPTGB84	1051953	772	793 - 200	2947	Phe-59 to Glu-68, Lys-105 to Gly-111.	H0660: 3, S0358: 2, L0755: 2, L0759: 2, H0624: 1, S0040: 1, S0342: 1, H0484: 1, H0638: 1, H0550: 1, H0486: 1, H0427: 1, H0706: 1, S0010: 1, S0182: 1, H0012: 1, H0405: 1, H0673: 1, H0488: 1, H0059: 1, T0042: 1, H0494: 1, S0150: 1, H0647: 1, S0144: 1, L0772: 1, L0766: 1, H0520: 1, H0547: 1, H0435: 1, H0214: 1, S3012: 1, L0750: 1, L0777: 1, L0758: 1, H0445: 1, L0601: 1 and S0276: 1.		
HVCCD05	1051983	773	3 - 968	2948		H0666: 440, H0660: 3, H0309: 1, L0471: 1, H0328: 1, H0383: 1, L0769: 1, L0789: 1 and S0152: 1.	17q11.2	154275, 162200, 162200, 182138, 239100, 600881, 601954,

HPYSC40	1052158	774	2 - 583	2949	Ile-1 to Pro-10, Pro-36 to Glu-43, Arg-92 to Cys-98, Glu-106 to Lys-115, Pro-174 to Leu-179.	L0751: 11, L0777: 9, L0809: 6, H0100: 4, H0112: 3, L0783: 3, L0747: 3, H0644: 2, H0670: 2, L0755: 2, S0040: 1, H0013: 1, H0031: 1, L0794: 1, H0144: 1 and L0759: 1.	9q34		602403
HDDMT56	1052261	775	155 - 844	2950	Pro-8 to Asp-23, Leu-27 to Ser-38, Thr-40 to Arg-69, Arg-73 to Asp-97, Asp-108 to Asp-126, Glu-135 to Ile-159, Pro-176 to Ala-181, Lys-184 to Asp-192, Val-202 to Arg-210, Thr-215 to His-221.	H0641: 1, L0775: 1 and H0659: 1.			
HVVAW02	1052553	776	2 - 652	2951	Ala-1 to Ala-8, Pro-26 to Tyr-32, Gly-48 to Pro-53, Asp-132 to Gly-137, Val-139 to Leu-144, Lys-165 to Gly-171, Ser-191 to Ala-198.	S0358: 6, L0748: 5, L0777: 5, H0171: 4, H0341: 4, S0408: 4, H0597: 4, H0620: 4, L0754: 4, L0749: 4, S0360: 3, H0596: 3, H0545: 3, H0494: 3, S0210: 3, L0769: 3, S0374: 3, H0659: 3,	7q21.1		129900, 154276, 171050, 171060, 602136, 602136, 602136, 602447

		S0040: 2, H0657: 2, H0661: 2, S0376: 2, S0007: 2, S0045: 2, S0046: 2, S0222: 2, H0431: 2, H0013: 2, H0530: 2, H0014: 2, H0266: 2, H0328: 2, H0644: 2, H0100: 2, L0771: 2, L0662: 2, L0803: 2, L0438: 2, H0547: 2, S0126: 2, S0330: 2, L0743: 2, L0439: 2, L0751: 2, H0445: 2, S0026: 2, S0276: 2, S0196: 2, H0265: 1, T0049: 1, S0218: 1, H0656: 1, H0638: 1, S0356: 1, S0444: 1, S0410: 1, H0580: 1, S0132: 1, H0393: 1, S0300: 1, H0586: 1, L0622: 1, H0486: 1, T0109: 1, S0280: 1, H0599: 1, S0010: 1, S0049: 1, H0204: 1, H0327: 1, H0123: 1, H0051: 1, H0275: 1, H0083: 1, H0629: 1, H0271: 1, H0188: 1, H0290: 1,				

		S0003: 1, T0006: 1, H0031: 1, H0628: 1, H0673: 1, H0068: 1, H0598: 1, H0163: 1, H0090: 1, H0040: 1, H0551: 1, H0412: 1, L0370: 1, H0641: 1, H0647: 1, L0520: 1, L0762: 1, L0770: 1, L0667: 1, L0764: 1, L0521: 1, L0794: 1, L0766: 1, L0650: 1, L0774: 1, L0775: 1, L0376: 1, L0806: 1, L0653: 1, L0776: 1, L0659: 1, L0540: 1, L0384: 1, L0383: 1, L0792: 1, H0520: 1, H0519: 1, H0689: 1, H0682: 1, H0666: 1, H0648: 1, H0672: 1, S0380: 1, H0518: 1, H0521: 1, H0522: 1, S0404: 1, S0406: 1, H0187: 1, L0612: 1, L0750: 1, L0731: 1, L0759: 1, L0588: 1, L0366: 1, H0136: 1, S0192: 1, S0194: 1, H0543: 1 and H0422: 1.			

HOGCS42	1052557	777	223 - 852	2952	Gly-156 to Met-161, Cys-186 to Lys-197.	AR039: 7, AR052: 6, AR089: 5, AR033: 4, AR104: 3, AR053: 3, AR096: 3, AR055: 3, AR061: 3, AR060: 2 S0358: 15, H0622: 15, S0354: 14, S0360: 11, H0435: 11, S0356: 9, H0039: 9, L0666: 9, L0751: 9, H0553: 8, H0506: 8, H0689: 7, L0748: 7, H0661: 6, L0659: 6, L0665: 6, S0376: 5, L0743: 5, H0484: 4, H0483: 4, H0059: 4, L0764: 4, L0771: 4, L0662: 4, L0809: 4, S0330: 4, H0615: 3, H0688: 3, H0040: 3, L0763: 3, L0364: 3, L0774: 3, L0663: 3, H0683: 3, H0670: 3, H0672: 3, L0750: 3, L0731: 3, H0663: 2, H0549: 2, H0046: 2, H0014: 2, H0124: 2, H0494: 2, S0450: 2, L0374: 2, L0765: 2, L0804: 2, L0378: 2, L0653: 2,		

		L0529: 2, H0593: 2, H0658: 2, S0152: 2, L0439: 2, L0779: 2, L0601: 2, H0294: 1, S0430: 1, H0675: 1, H0676: 1, H0370: 1, H0587: 1, H0642: 1, T0109: 1, H0204: 1, L0040: 1, L0738: 1, H0620: 1, H0024: 1, H0356: 1, H0375: 1, L0194: 1, T0023: 1, L0483: 1, H0033: 1, H0424: 1, H0644: 1, H0264: 1, H0488: 1, H0413: 1, H0334: 1, S0352: 1, S0306: 1, S0440: 1, H0647: 1, H0646: 1, H0652: 1, L0373: 1, L0646: 1, L0648: 1, L0803: 1, L0375: 1, L0376: 1, L0806: 1, L0658: 1, L0382: 1, L0528: 1, L0664: 1, S0374: 1, H0690: 1, H0682: 1, H0648: 1, S0328: 1, H0478: 1, S0432: 1, L0744: 1, L0754: 1, L0747: 1, L0749: 1,				

						L0755: 1, L0759: 1, L0596: 1, H0543: 1, S0462: 1 and H0352: 1.		
HAZAA59	1052593	778	29 - 745	2953		S0358: 4, L0752: 4, H0012: 3, H0266: 3, L0740: 3, L0731: 3, H0615: 2, L0772: 2, L0776: 2, L0565: 2, L0605: 2, L0608: 2, L0362: 2, H0423: 2, H0556: 1, S0114: 1, S0134: 1, H0341: 1, H0255: 1, H0664: 1, H0638: 1, S0356: 1, H0676: 1, H0441: 1, H0392: 1, H0613: 1, H0333: 1, H0632: 1, L0021: 1, S0049: 1, H0251: 1, H0327: 1, H0572: 1, L0471: 1, H0271: 1, H0252: 1, T0023: 1, H0135: 1, H0591: 1, H0560: 1, S0150: 1, L0637: 1, L3904: 1, L0764: 1, L0364: 1, L0803: 1, L0661: 1, L0647: 1, L0790: 1, L0663: 1, H0144: 1, S0374: 1, H0547: 1, H0690: 1,		

						H0670: 1, H0672: 1, H0539: 1, S0406: 1, H0555: 1, L0356: 1, L0742: 1, L0748: 1, L0746: 1, L0779: 1, L0758: 1, H0445: 1 and S0026: 1.		
HPDRP02	1052728	779	248 - 670	2954	Pro-12 to Asp-20, Leu-30 to Glu-37, Lys-62 to Asp-70, Met-99 to Asp-109, Ala-115 to Asn-122, Gly-135 to Asp-141.	H0619: 3, H0662: 2, H0135: 1, H0593: 1 and H0658: 1.		
HMALJ21	1052874	780	623 - 1033	2955	Gly-9 to Thr-24.	L0789: 4, H0660: 2, S0278: 1, H0250: 1, T0010: 1, H0163: 1, H0551: 1, L0657: 1, L0777: 1, L0755: 1 and L0731: 1.		
HLYAR61	1053037	781	120 - 431	2956	Gln-17 to Gly-27, Glu-39 to Asp-52, Lys-79 to Asn-84.	H0341: 3, H0580: 2, S0049: 2, S0422: 2, T0049: 1, H0656: 1, S0222: 1, H0632: 1, H0486: 1, H0581: 1, H0266: 1, H0494: 1, S0438: 1, H0520: 1, H0659: 1, H0704: 1, S0406: 1, L0754: 1, L0747: 1, L0750: 1, L0752: 1, L0757: 1,		

HLTCQ80	1053164	782	2 - 562	2957		H0445: 1 and S0276: 1.	8q24	131950, 153840, 600669, 601282, 601455, 602232	
						H0616: 5, L0758: 4, L0362: 4, H0529: 3, L0803: 3, L0809: 3, H0592: 2, L0804: 2, L0527: 2, L0665: 2, H0547: 2, L0439: 2, L0754: 2, L0777: 2, L0485: 2, S0114: 1, H0657: 1, H0341: 1, S0420: 1, S0442: 1, S0358: 1, S0376: 1, H0675: 1, H0580: 1, H0632: 1, S0414: 1, H0013: 1, H0706: 1, H0327: 1, H0123: 1, H0428: 1, H0622: 1, H0090: 1, H0038: 1, H0551: 1, H0412: 1, S0450: 1, S0438: 1, H0647: 1, L0763: 1, L0770: 1, L0769: 1, L0761: 1, L0764: 1, L0794: 1, L0776: 1, L0659: 1, L0526: 1, L0783: 1, L0666: 1, L0663: 1, L0438: 1, H0690: 1, H0659: 1, H0670: 1, H0672: 1, H0710: 1, H0436: 1,		

HDTDU67	1053171	783	485 - 697	2958	Ser-9 to Gln-19.	S0028: 1, L0779: 1 and L0731: 1.		
						L0362: 6, H0486: 3, S0406: 3, L0809: 2, S0434: 2, H0624: 1, H0663: 1, S0376: 1, S0360: 1, H0329: 1, S0046: 1, H0586: 1, H0150: 1, L0483: 1, H0096: 1, H0124: 1, H0591: 1, S0422: 1, L0598: 1, L0369: 1, L0763: 1, L0638: 1, L0521: 1, L0662: 1, L0766: 1, L0803: 1, L0776: 1, L0655: 1, L0657: 1, L0659: 1, L0793: 1, L0666: 1, L0665: 1, L0565: 1, H0520: 1, H0519: 1, H0684: 1, H0648: 1, H0521: 1, H0696: 1, L0747: 1, L0779: 1, L0777: 1, L0752: 1, L0758: 1, L0608: 1, H0506: 1 and H0352: 1.		
HMABL01	1053173	784	210 - 1289	2959	Ala-1 to Arg-6, Gly-45 to Gly-51, Ser-53 to Lys-69, Asp-89 to Ser-100,	L0493: 10, L0748: 6, L0601: 5, H0615: 4, L0741: 4, H0052: 3, L0774: 3, L0776: 3,		

					Pro-106 to Leu-117, His-119 to Gly-124, Asp-166 to Ser-176, Ser-293 to Cys-301, Pro-306 to Cys-313, Ser-317 to Gln-327, Arg-332 to Pro-341.	L0754: 3, L0749: 3, S0222: 2, H0318: 2, H0620: 2, S0422: 2, L0500: 2, L0769: 2, L0766: 2, L0375: 2, L0514: 2, L0793: 2, S0126: 2, S6024: 1, H0484: 1, H0125: 1, H0393: 1, H0586: 1, H0497: 1, H0331: 1, H0574: 1, L0622: 1, H0013: 1, T0082: 1, S0010: 1, L0563: 1, H0597: 1, L0471: 1, H0012: 1, H0356: 1, H0328: 1, H0428: 1, H0039: 1, T0006: 1, H0424: 1, T0067: 1, H0487: 1, H0059: 1, S0144: 1, S0426: 1, L0770: 1, L5575: 1, L0768: 1, L0794: 1, L0499: 1, L0497: 1, L0806: 1, L0805: 1, L0783: 1, L0789: 1, L0666: 1, L0663: 1, L0664: 1, H0144: 1, S0374: 1, L0438: 1, H0547: 1, H0519: 1, H0593: 1, H0658: 1,		

HACMU05	1053236	785	1717 - 2631	2960	His-10 to Ala-18, Lys-77 to Glu-86, Gln-137 to Trp-143, Gln-256 to Asp-263, Glu-276 to Arg-285.	H0656: 6, H0521: 6, H0543: 4, S0002: 3, L0766: 3, H0664: 2, H0581: 2, H0488: 2, L0771: 2, L0767: 2, L0794: 2, L0789: 2, H0593: 2, H0436: 2, L0748: 2, L0439: 2, H0542: 2, H0423: 2, H0265: 1, H0685: 1, H0657: 1, H0663: 1, H0402: 1, H0125: 1, S0418: 1, S0354: 1, S0358: 1, H0637: 1, S0046: 1, S0278: 1, H0611: 1, H0586: 1, H0486: 1, S0280: 1, L0021: 1, H0457: 1, H0373: 1, H0083: 1, H0622: 1, H0553: 1, H0181: 1, S0036: 1, H0087: 1, H0264: 1, H0413: 1, H0623: 1, H0059: 1, H0429: 1, H0647: 1, S0144: 1, H0529: 1, L0639: 1,	S0032: 1, L0740: 1, L0755: 1, L0758: 1, H0444: 1, L0596: 1 and S0192: 1.	17q25	114290, 138033, 162100, 170500, 170500, 170500, 180860, 264470

					L0761: 1, L0667: 1, L0644: 1, L0768: 1, L0659: 1, L0809: 1, L0790: 1, L0666: 1, L0663: 1, H0703: 1, S0374: 1, H0689: 1, H0684: 1, S0332: 1, H0555: 1, L0609: 1, L0749: 1, L0779: 1 and H0136: 1.		
HOVDF79	1053369	786	3 - 587	2961	Ala-8 to Gly-15, Gln-44 to Asn-52, Gly-62 to Ser-68.	H0615: 1, H0428: 1, L0638: 1, L0764: 1, L0659: 1, L0438: 1, L0352: 1, H0648: 1, L0439: 1 and L0731: 1.		
HVVBJ54	1053547	787	2 - 610	2962		H0135: 13, H0052: 9, H0539: 8, H0521: 8, H0013: 7, L0769: 7, L0666: 7, L0750: 7, L0599: 7, S0007: 6, H0619: 6, H0333: 6, H0486: 6, S0010: 6, H0012: 6, L0766: 6, H0144: 6, H0593: 6, L0745: 6, H0656: 5, H0197: 5, H0024: 5, H0428: 5, H0100: 5, L0520: 5, L0776: 5, L0655: 5, L0517: 5, L0663: 5, H0670: 5,	19p13.3	108725, 120700, 133171, 136836, 145981, 147141, 164953, 188070, 600957, 601238, 601846, 602216, 602477

		H0522: 5, S0044: 5, L0744: 5, L0747: 5, L0779: 5, H0423: 5, S0360: 4, L0665: 4, H0547: 4, H0519: 4, S0126: 4, H0555: 4, H0436: 4, S0028: 4, L0439: 4, L0740: 4, L0758: 4, H0445: 4, H0255: 3, H0069: 3, H0618: 3, H0581: 3, H0457: 3, H0150: 3, H0050: 3, H0687: 3, H0622: 3, H0424: 3, H0617: 3, H0087: 3, T0067: 3, L0662: 3, L0649: 3, L0774: 3, L0659: 3, L0530: 3, S0374: 3, L0438: 3, H0672: 3, S0380: 3, L0751: 3, L0759: 3, L0596: 3, L0589: 3, H0506: 3, S0040: 2, S0114: 2, T0049: 2, H0583: 2, H0657: 2, S0116: 2, S0212: 2, H0662: 2, H0402: 2, S0356: 2, S0045: 2, S0046: 2, H0369: 2, S0222: 2, H0586: 2,				

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		H0543: 2, H0265: 1, H0556: 1, H0686: 1, S0218: 1, S0282: 1, H0254: 1, H0663: 1, H0306: 1, H0638: 1, S0418: 1, S0354: 1, S0358: 1, S0376: 1, S0408: 1, H0637: 1, L0476: 1, H0393: 1, H0437: 1, H0550: 1, S6016: 1, H0392: 1, H0455: 1, H0249: 1, H0600: 1, T0040: 1, T0060: 1, H0635: 1, H0427: 1, H0599: 1, H0706: 1, H0036: 1, H0253: 1, T0048: 1, H0318: 1, S0474: 1, S0049: 1, H0309: 1, H0046: 1, H0569: 1, H0081: 1, H0154: 1, S0051: 1, H0083: 1, S6028: 1, H0238: 1, H0188: 1, S0318: 1, H0288: 1, S0022: 1, H0328: 1, H0039: 1, L0483: 1, H0031: 1, H0553: 1, H0644: 1, H0628: 1, L0055: 1, H0674: 1, L0456: 1,				

		H0708: 1, S0036: 1, H0040: 1, H0551: 1, H0379: 1, H0477: 1, H0264: 1, H0488: 1, H0059: 1, S0038: 1, L0351: 1, H0429: 1, H0494: 1, H0625: 1, S0464: 1, H0132: 1, H0647: 1, H0646: 1, L0598: 1, L0369: 1, L0640: 1, L0763: 1, L0501: 1, L0372: 1, L0773: 1, L0768: 1, L0661: 1, L0558: 1, L0540: 1, L0547: 1, L0783: 1, L0384: 1, L0541: 1, L0647: 1, L0532: 1, L0664: 1, S0052: 1, S0428: 1, H0697: 1, H0689: 1, H0682: 1, H0683: 1, H0648: 1, S0330: 1, H0518: 1, H0696: 1, S0190: 1, H0694: 1, S0404: 1, H0576: 1, S0390: 1, L0748: 1, L0752: 1, L0753: 1, L0485: 1, L0608: 1, H0665: 1, H0422: 1, S0424: 1, L0600: 1 and			

HOFMU50	1053548	788	356 - 547	2963	Gln-36 to Leu-47, Glu-55 to Asn-64.	H0352: 1. H0415: 2, H0583: 1, H0123: 1, H0623: 1, H0518: 1 and L0779: 1.			
HE9MO38	1053585	789	2 - 268	2964	Pro-26 to Ala-33, Gly-68 to Gln-75.	H0254: 1, S0278: 1, L0764: 1, H0144: 1, S0424: 1 and H0506: 1.			
HOPJF55	1053725	790	3 - 698	2965	Glu-1 to Gly-11, Gln-83 to Asp-98, Glu-101 to Gln-110, Gln-112 to Gln-120, Thr-128 to Asn-133, Glu-135 to Gly-142, Asp-145 to Cys-153, His-160 to Cys-166.	L0747: 10, L0771: 8, H0333: 7, H0620: 6, H0545: 5, H0024: 5, H0551: 5, L0659: 5, L0665: 5, H0012: 4, L0769: 4, L0375: 4, S0126: 4, L0740: 4, L0754: 4, L0755: 4, L0759: 4, H0294: 3, S0045: 3, H0550: 3, L0471: 3, L0794: 3, H0689: 3, H0682: 3, L0749: 3, H0624: 2, H0171: 2, H0251: 2, H0081: 2, H0050: 2, H0252: 2, H0428: 2, H0124: 2, H0068: 2, L0637: 2, L0368: 2, L0792: 2, L0565: 2, L0779: 2, L0777: 2, L0757: 2, H0352: 2, H0170: 1, H0685: 1, S0356: 1, S0376: 1,	1p36.1-p35		116600, 118210, 120550, 120570, 120575, 121800, 130500, 133200, 138140, 138971, 171760, 171760, 172411, 185470, 230350, 255800, 600975, 602771

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HAOTD13	1053746	791	2 - 808	2966	L0748: 22, L0751: 11, L0754: 11, L0740: 9, L0758: 9, H0659: 7, L0362: 6, H0052: 5, S0003: 5, L0769: 5, H0651: 5, L0747: 4,		

		H0265: 3, H0657: 3, H0402: 3, S0358: 3, S0360: 3, H0150: 3, H0012: 3, H0413: 3, S0344: 3, H0529: 3, L0770: 3, L0766: 3, L0752: 3, H0686: 2, S0420: 2, S0046: 2, H0441: 2, L0622: 2, H0013: 2, H0327: 2, H0545: 2, H0606: 2, L0455: 2, H0100: 2, T0041: 2, H0509: 2, S0422: 2, L0774: 2, L0805: 2, L0659: 2, H0691: 2, H0690: 2, H0672: 2, H0521: 2, S0044: 2, S3014: 2, S0206: 2, S0032: 2, L0749: 2, L0755: 2, L0581: 2, L0594: 2, H0667: 2, S0446: 2, H0352: 2, H0170: 1, H0556: 1, S0040: 1, T0049: 1, H0583: 1, H0483: 1, H0661: 1, S0418: 1, S0045: 1, S0132: 1, H0351: 1, H0333: 1, H0486: 1, H0101: 1, T0082: 1,				

		H0253: 1, S0010: 1, H0318: 1, H0581: 1, H0009: 1, H0123: 1, L0471: 1, H0014: 1, H0188: 1, H0328: 1, H0428: 1, T0023: 1, H0031: 1, H0553: 1, H0644: 1, H0313: 1, H0181: 1, H0617: 1, L0055: 1, H0673: 1, H0361: 1, H0087: 1, T0067: 1, H0433: 1, H0412: 1, H0494: 1, S0448: 1, S0210: 1, L0763: 1, L0371: 1, L0639: 1, L0637: 1, L0761: 1, L0772: 1, L0372: 1, L0645: 1, L0764: 1, L0771: 1, L0521: 1, L0662: 1, L0387: 1, L0650: 1, L0375: 1, L0806: 1, L0776: 1, L0655: 1, L0657: 1, L0783: 1, L0809: 1, L0529: 1, L0666: 1, L0664: 1, L0665: 1, H0689: 1, H0435: 1, H0670: 1, H0648: 1, H0539: 1, H0187: 1, S0028: 1,				

					L0743: 1, L0750: 1, L0757: 1, L0759: 1, H0445: 1, S0242: 1, S0196: 1, L0698: 1, UNKWN: 1 and L0600: 1.			
HODCJ32	1053772	792	643 - 149	2967	Tyr-1 to Glu-8, Pro-51 to Thr-67, Val-85 to Ser-90, Pro-118 to Gly-128.	L0776: 4, L0756: 4, L0777: 4, L0749: 2, H0052: 1, H0565: 1, H0328: 1, L0770: 1, L0769: 1, L0761: 1, L0805: 1, L0659: 1, L0809: 1, L0787: 1, L0666: 1, L0665: 1, L0439: 1, L0751: 1, L0745: 1, L0747: 1, L0779: 1 and L0758: 1.		
HOCPT34	1053973	793	1 - 2355	2968	Ser-19 to Gly-26, Glu-46 to Gln-52, Pro-61 to Ser-66, Arg-71 to Leu-85, Tyr-99 to Tyr-105, Pro-107 to Gly-115, Leu-137 to Leu-147, Glu-175 to Leu-181, Ala-187 to Ser-196, Ile-200 to Trp-209, Ser-353 to Lys-367, Gly-388 to Ser-397, Thr-415 to Val-423,	L0438: 5, L0749: 4, H0266: 3, H0038: 3, L0803: 3, L0666: 3, L0777: 3, L0763: 2, H0547: 2, L0748: 2, L0759: 2, S0031: 2, L0591: 2, S0358: 1, S0376: 1, S0007: 1, S0045: 1, S0132: 1, S0222: 1, H0013: 1, S0010: 1, H0390: 1, H0052: 1, H0596: 1, H0046: 1, H0564: 1,	2q23-q31	100690, 120180, 120180, 120180, 120180, 120190, 142989, 156232, 178600, 266100, 600258, 600321

				Glu-459 to Cys-469, Gly-471 to Pro-481.	N0007: 1, H0201: 1, H0616: 1, H0551: 1, T0042: 1, H0561: 1, H0131: 1, H0529: 1, L0761: 1, L0641: 1, L0774: 1, L0776: 1, L0659: 1, L0665: 1, H0520: 1, H0519: 1, H0593: 1, S0126: 1, H0660: 1, H0539: 1, H0579: 1, L0743: 1, L0439: 1, L0745: 1, L0747: 1, L0750: 1, S0260: 1 and L0366: 1.			107741, 113900, 122720, 122720, 126340, 126391, 134790, 160900, 164731, 173850, 191044, 207750, 248600, 258501, 600040, 600138
HFKHC64	1054015	794	1928 - 363	2969	Gly-6 to His-16, Arg-20 to Gly-41, Arg-115 to Asn-121, Phe-136 to Glu-144, Lys-152 to Glu-162, Glu-176 to Thr-182, Pro-205 to Gln-212, Lys-229 to Ala-235, Gly-310 to Trp-315, Val-328 to Thr-342.	L0601: 7, H0521: 6, S0418: 4, H0617: 4, L0665: 4, S0046: 3, H0620: 3, H0551: 3, H0413: 3, L0659: 3, H0672: 3, H0522: 3, L0758: 3, H0250: 2, H0012: 2, H0428: 2, H0622: 2, H0628: 2, H0181: 2, S0422: 2, L0794: 2, L0526: 2, L0518: 2, H0547: 2, H0684: 2, H0539: 2, L0602: 2, L0743: 2, L0439: 2, L0751: 2, L0749: 2, L0604: 2,	19q13.2-q13.4		

						L0603: 2, H0295: 1, S0212: 1, H0638: 1, S0356: 1, S0376: 1, S0360: 1, H0370: 1, H0587: 1, H0333: 1, H0486: 1, H0427: 1, H0156: 1, L0021: 1, H0618: 1, H0253: 1, H0052: 1, H0563: 1, H0023: 1, H0266: 1, S0022: 1, H0039: 1, T0006: 1, H0424: 1, H0135: 1, H0264: 1, H0623: 1, H0509: 1, H0647: 1, L0520: 1, L0375: 1, L0654: 1, L0783: 1, L0809: 1, L0789: 1, L0666: 1, L0663: 1, S0374: 1, H0593: 1, S0126: 1, H0690: 1, S0328: 1, S0152: 1, S0146: 1, H0555: 1, L0779: 1, L0752: 1, L0731: 1, L0759: 1, L0592: 1, S0011: 1, H0665: 1, H0667: 1 and S0042: 1.		
HOPKO37	1054085	795	2117 - 1056	2970	Arg-22 to Met-33, Ile-38 to Ala-49, Val-64 to Pro-85,	H0124: 6, L0769: 3, L0768: 3, L0794: 3, L0522: 3, L0666: 3,	5	

HNBVO53	1054122	796	2 - 2332	2971	His-4 to Tyr-10, Ile-58 to Leu-63, Pro-65 to Val-74, Pro-105 to Ala-123.	L0794: 5, H0542: 5, S0358: 3, H0013: 2, H0618: 2, H0617: 2, H0620: 2, H0617: 2, H0412: 2, H0100: 2, H0646: 2, H0520: 2, H0684: 2, L0588: 2, L0778: 1, H0484: 1, H0661: 1, S0360: 1, H0586: 1, H0427: 1, H0253: 1, H0581: 1, H0546: 1, H0009: 1, N0006: 1, H0172: 1, H0012: 1, H0188: 1, H0181: 1, H0606: 1, H0040: 1, H0059: 1, H0561: 1, S0002: 1, L0503: 1, L0640: 1, L0803: 1, L0652: 1, L0654: 1, L0790: 1, L0664: 1, L0565: 1, H0682: 1, H0658: 1, H0670: 1, H0660: 1, H0539: 1, L0744: 1, L0439: 1, L0754: 1, L0747: 1, L0750: 1, L0777: 1, L0731: 1, S0260: 1, L0593: 1, H0506: 1 and H0352: 1.		

					Leu-122 to Ser-132, Gln-134 to Leu-144, Pro-155 to Ser-166.	L0769: 2, L0764: 2, L0662: 2, L0803: 2, H0670: 2, L0756: 2, L0595: 2, L0361: 2, H0556: 1, S0040: 1, L0785: 1, H0341: 1, H0661: 1, H0662: 1, H0402: 1, S0420: 1, H0370: 1, T0040: 1, T0114: 1, H0253: 1, H0581: 1, H0041: 1, H0687: 1, H0604: 1, H0213: 1, H0644: 1, H0181: 1, H0087: 1, H0412: 1, H0413: 1, H0100: 1, S0382: 1, H0509: 1, S0210: 1, L0763: 1, L0761: 1, L0372: 1, L0641: 1, L0649: 1, L0386: 1, L0809: 1, L0789: 1, L0663: 1, H0693: 1, H0658: 1, H0672: 1, H0539: 1, S0027: 1, L0757: 1, L0758: 1, L0604: 1, H0543: 1, H0506: 1 and H0352: 1.		
HOPKF84	1054155	797	395 - 1168	2972	Ser-11 to Cys-17, Glu-39 to Tyr-49, Glu-98 to Glu-104,	L0766: 5, L0804: 3, L0105: 2, L0803: 2, L0788: 2, H0659: 2,		

					Gly-122 to Ser-128, Tyr-154 to Val-163, Glu-170 to Thr-195, Leu-213 to Gly-218, Lys-229 to Phe-236, Ser-241 to Ser-248.	L0759: 2, H0624: 1, H0657: 1, H0661: 1, H0601: 1, H0266: 1, H0687: 1, H0032: 1, H0413: 1, S0450: 1, H0509: 1, L0763: 1, L0638: 1, L0761: 1, L0662: 1, L0650: 1, L0805: 1, L0659: 1, L0666: 1, L0664: 1, L0665: 1, S0052: 1, H0547: 1, H0684: 1, L0745: 1, L0747: 1, L0750: 1, L0731: 1, L0758: 1, H0595: 1, S0026: 1, H0543: 1, S0424: 1 and S0456: 1.			
HCQDQ11	1054196	798	109 - 174	2973		H0594: 11, H0596: 8, S0282: 5, S0260: 5, S0194: 5, H0543: 5, S0278: 2, H0600: 2, H0592: 2, H0598: 2, S0344: 2, H0595: 2, S0356: 1, H0438: 1, H0574: 1, H0599: 1, S0346: 1, H0318: 1, H0597: 1, S0388: 1, H0316: 1, S0390: 1 and H0542: 1.	17p13.3	113721, 247200, 600059, 601545	
HTFML39	1054230	799	1 - 873	2974	Ala-23 to Gly-49,	H0124: 2, H0618: 1,			

					Ser-106 to Pro-115, Gly-160 to Lys-167, Thr-183 to Gly-189, Glu-196 to Gly-211, Ala-218 to Gly-224, Val-257 to Leu-269.	H0123: 1, H0012: 1, H0083: 1, H0428: 1, H0593: 1, L0740: 1 and S0424: 1.		
HOGCR32	1054235	800	3 - 137	2975	Pro-3 to Lys-13, Thr-39 to Ile-45.	H0435: 2		
HFCDL60	1054288	801	1158 - 241	2976	Glu-2 to Thr-7, Arg-64 to Lys-72, Glu-77 to Leu-83, Arg-93 to Ser-102, Ile-118 to Gln-123, Ser-152 to Gly-158, Gln-276 to Ser-282.	AR089: 7, AR104: 6, AR096: 6, AR053: 4, AR039: 4, AR060: 3, AR033: 1, AR061: 1, AR055: 0 L0777: 9, H0556: 8, H0620: 7, L0766: 7, H0521: 7, L0747: 6, S0360: 5, H0250: 5, L0751: 5, L0794: 4, L0754: 4, L0591: 4, S0354: 3, S0358: 3, S0278: 3, H0553: 3, S0144: 3, L0769: 3, L0773: 3, H0547: 3, S0404: 3, S3014: 3, L0743: 3, L0744: 3, L0439: 3, L0752: 3, L0731: 3, H0445: 3, S0218: 2, H0580: 2, S0132: 2, H0393: 2, H0550: 2, S0222: 2,	15q23-q25	118485, 151670, 231680, 272800, 272800, 272800, 276700, 600374, 601780

		H0486: 2, H0635: 2, H0575: 2, H0590: 2, H0251: 2, H0309: 2, H0457: 2, H0150: 2, H0050: 2, H0083: 2, H0266: 2, H0288: 2, H0135: 2, H0264: 2, T0041: 2, H0561: 2, L0761: 2, L0771: 2, L0768: 2, L0649: 2, L0804: 2, L0651: 2, L0518: 2, L0789: 2, L0666: 2, H0144: 2, L0565: 2, L0438: 2, S0330: 2, S0037: 2, S0027: 2, L0740: 2, L0745: 2, L0758: 2, S0434: 2, L0581: 2, L0593: 2, L0595: 2, H0542: 2, H0543: 2, T0002: 1, S0040: 1, H0717: 1, H0657: 1, H0656: 1, H0341: 1, H0483: 1, H0255: 1, H0305: 1, H0589: 1, S0420: 1, H0676: 1, H0208: 1, S0045: 1, S0046: 1, H0370: 1, H0392: 1, H0592: 1, H0587: 1, T0040: 1,				

		S0280: 1, H0156: 1, H0706: 1, H0318: 1, H0310: 1, H0231: 1, H0545: 1, H0009: 1, H0565: 1, H0123: 1, H0012: 1, H0047: 1, H0197: 1, H0024: 1, H0057: 1, T0010: 1, H0267: 1, H0252: 1, H0688: 1, H0617: 1, S0364: 1, H0124: 1, S0036: 1, H0040: 1, H0488: 1, H0412: 1, H0059: 1, H0100: 1, H0494: 1, H0560: 1, S0448: 1, S0440: 1, H0131: 1, H0130: 1, H0633: 1, H0647: 1, S0344: 1, L0770: 1, L0643: 1, L0645: 1, L0764: 1, L0521: 1, L0364: 1, L0381: 1, L0774: 1, L0775: 1, L0806: 1, L0653: 1, L0776: 1, L0659: 1, L0809: 1, L0663: 1, L0664: 1, H0699: 1, S0374: 1, H0435: 1, H0648: 1, S0152: 1, S0044: 1, H0134: 1,		

					S0406: 1, S0032: 1, L0749: 1, L0756: 1, L0779: 1, L0759: 1, S0260: 1, H0665: 1, H0136: 1, H0423: 1, S0424: 1 and H0506: 1.			
HODEC13	1054400	802	1599 - 880	2977	H0208: 2, H0615: 2, S0001: 1, H0351: 1, H0545: 1, H0081: 1, H0424: 1 and H0334: 1.			
HUSYA18	1054451	803	689 - 138	2978	L0749: 15, L0748: 9, L0758: 9, L0766: 8, L0770: 7, H0266: 6, L0775: 6, L0655: 6, L0731: 6, L0362: 6, S0444: 5, L0764: 5, L0809: 5, S0358: 4, H0637: 4, L0777: 4, L0752: 4, H0305: 3, S0440: 3, L0646: 3, L0773: 3, S0406: 3, L0439: 3, L0740: 3, L0754: 3, L0755: 3, L0759: 3, H0341: 2, S0420: 2, S0356: 2, S0360: 2, S6028: 2, H0551: 2, S0438: 2, L0761: 2, L0373: 2, L0800: 2, L0768: 2, L0774: 2, L0666: 2,	13q12.3-q13.1	157900, 600185, 600185, 600631	

		L0665: 2, S0378: 2, S0380: 2, L0750: 2, L0592: 2, H0423: 2, H0624: 1, H0685: 1, H0664: 1, S0418: 1, S0476: 1, H0393: 1, H0351: 1, S0222: 1, H0574: 1, L0623: 1, H0486: 1, H0156: 1, T0082: 1, H0036: 1, S0010: 1, H0318: 1, H0309: 1, H0569: 1, S0003: 1, L0055: 1, H0673: 1, S0036: 1, H0412: 1, H0413: 1, S0038: 1, L0351: 1, T0041: 1, H0494: 1, H0714: 1, L0369: 1, L0520: 1, L0763: 1, L0769: 1, L0772: 1, L0372: 1, L0645: 1, L0521: 1, L0767: 1, L0364: 1, L0794: 1, L0649: 1, L0375: 1, L0651: 1, L0378: 1, L0805: 1, L0653: 1, L4669: 1, L0659: 1, L0792: 1, L5286: 1, L0663: 1, L0664: 1, S0374: 1, H0689: 1,			

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HOCON42	1054527	804	2000 - 1755	2979	Glu-16 to Gly-33, Lys-63 to Lys-71, Asp-77 to Pro-82.	S0250: 5, L0764: 4, H0457: 3, L0789: 3, H0543: 3, H0650: 2, L0717: 2, H0594: 2, H0622: 2, L0769: 2, L0800: 2, L0794: 2, L0657: 2, L0809: 2, H0670: 2, H0521: 2, H0445: 2, H0136: 2, H0542: 2, H0656: 1, H0484: 1, H0255: 1, S0354: 1, S0358: 1, S0360: 1, H0550: 1, H0370: 1, H0597: 1, H0081: 1, H0012: 1, H0620: 1, H0266: 1, H0553: 1, S0364: 1, H0063: 1, H0488: 1, H0412: 1, H0059: 1,		

					H0494: 1, H0561: 1, H0509: 1, S0144: 1, S0344: 1, S0210: 1, S0002: 1, L0770: 1, L0667: 1, L0772: 1, L0771: 1, L0662: 1, L0803: 1, L0774: 1, L0806: 1, L0655: 1, L0659: 1, L0636: 1, L0783: 1, L0663: 1, L0664: 1, L0665: 1, H0519: 1, H0689: 1, H0684: 1, H0658: 1, H0660: 1, L0602: 1, H0436: 1, L0779: 1, S0031: 1, L0595: 1 and S0424: 1.		
HKMNH37	1054550	805	22 - 1206	2980	Ser-24 to Thr-31, Pro-164 to Asn-173, Val-185 to Arg-192, Gln-199 to Gly-204, Lys-250 to Gly-258, Gln-265 to Ser-277, Gln-322 to Gly-327, Ala-334 to Ser-343, Pro-349 to Cys-356.	L0777: 5, L0748: 4, S0007: 2, L0764: 2, L0809: 2, L0750: 2, L0759: 2, H0669: 1, H0730: 1, H0431: 1, L0022: 1, H0581: 1, H0057: 1, H0271: 1, H0428: 1, L0768: 1, L0794: 1, L0766: 1, L0803: 1, L0805: 1, L0655: 1, L0657: 1, L0518: 1, L0783: 1, L0666: 1, L0665: 1,	

					L0743: 1, L0740: 1, L0751: 1, L0747: 1, L0756: 1, H0445: 1, L0599: 1, H0423: 1, L0698: 1 and H0352: 1.			
HPDWP21	1054662	806	63 - 797	2981	Lys-26 to Glu-41, Lys-149 to Ala-156, Arg-214 to Lys-225, Ile-229 to Lys-235, Glu-240 to His-245.	L0659: 10, L0439: 5, L0378: 4, L0748: 4, L0777: 4, H0657: 3, L0662: 3, L0655: 3, L0665: 3, S0428: 3, H0658: 3, S0434: 3, H0618: 2, S0474: 2, S0049: 2, H0309: 2, H0024: 2, H0412: 2, S0002: 2, S0426: 2, L0646: 2, L0771: 2, L0774: 2, L0657: 2, L0664: 2, H0696: 2, S0027: 2, L0588: 2, L0605: 2, L0601: 2, H0556: 1, T0002: 1, H0716: 1, S0116: 1, H0661: 1, H0662: 1, S0418: 1, S0442: 1, S0444: 1, H0208: 1, S0132: 1, S0476: 1, H0619: 1, H0351: 1, S6022: 1, H0549: 1, S0220: 1, H0455: 1, H0427: 1, S0280: 1,			

						H0706: 1, T0071: 1, H0544: 1, H0546: 1, H0545: 1, N0006: 1, H0123: 1, H0057: 1, S0051: 1, H0188: 1, H0031: 1, L0055: 1, H0673: 1, H0708: 1, H0163: 1, H0090: 1, H0634: 1, H0087: 1, H0623: 1, H0059: 1, S0386: 1, H0633: 1, H0538: 1, H0695: 1, L0763: 1, L0769: 1, L0638: 1, L0639: 1, L5565: 1, L0667: 1, L0764: 1, L0650: 1, L0775: 1, L0375: 1, L0807: 1, L0542: 1, L0384: 1, L0666: 1, H0144: 1, H0519: 1, S0008: 1, H0660: 1, H0518: 1, H0521: 1, S0044: 1, H0436: 1, S0037: 1, S3014: 1, L0744: 1, L0740: 1, L0731: 1, L0757: 1, L0758: 1, S0031: 1, H0445: 1, S0194: 1, H0423: 1 and H0721: 1.		
HOGCS52	1054677	807	21 - 1388	2982	Met-31 to Arg-37,	AR096: 52, AR039:		

					Thr-157 to Arg-176, Gly-183 to Tyr-188, Leu-229 to Asp-234, Leu-275 to Lys-280, Thr-381 to Asn-386, Asp-424 to Arg-434.	49, AR089: 49, AR053: 43, AR060: 33, AR061: 20, AR055: 19, AR104: 18, AR033: 17 L0751: 8, L0754: 8, L0769: 6, L0803: 6, L0748: 6, H0100: 5, H0435: 5, L0439: 5, L0758: 5, L0665: 4, L0747: 4, L0749: 4, S0114: 3, H0619: 3, H0546: 3, H0457: 3, S0002: 3, L0637: 3, L0657: 3, H0658: 3, L0743: 3, L0777: 3, L0780: 3, H0445: 3, S0040: 2, H0255: 2, H0645: 2, S0278: 2, H0024: 2, H0416: 2, H0030: 2, H0553: 2, H0135: 2, H0649: 2, L0770: 2, L0804: 2, L0774: 2, L0805: 2, L0659: 2, H0659: 2, H0518: 2, H0555: 2, L0755: 2, L0757: 2, L0599: 2, L0603: 2, H0423: 2, H0265: 1, H0556: 1, L0460: 1, H0295: 1, S0218: 1,

		H0583: 1, H0650: 1, S0212: 1, H0483: 1, H0402: 1, H0125: 1, S0418: 1, S0420: 1, S0356: 1, S0360: 1, S0046: 1, L0717: 1, H0261: 1, H0370: 1, H0391: 1, H0438: 1, H0486: 1, T0039: 1, H0250: 1, H0156: 1, L0021: 1, H0575: 1, T0082: 1, H0253: 1, S0474: 1, T0071: 1, H0581: 1, S0049: 1, H0052: 1, H0235: 1, H0150: 1, L0471: 1, H0620: 1, S0362: 1, S0388: 1, T0010: 1, H0594: 1, H0266: 1, H0188: 1, H0687: 1, H0292: 1, H0615: 1, H0688: 1, H0048: 1, H0424: 1, H0031: 1, H0644: 1, L0143: 1, H0181: 1, H0617: 1, L0455: 1, H0708: 1, H0163: 1, H0591: 1, H0551: 1, H0488: 1, H0646: 1, S0344: 1, L0762: 1, L0640: 1,			

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HWMCK60	1054751	808	3 - 485	2983	Ser-46 to Ala-56,	H0694: 23, L0777: 11,		

					Asp-85 to Ala-116, Gln-132 to Lys-140, Phe-143 to Leu-152.	L0747: 10, L0005: 9, L0755: 8, L0754: 7, L0731: 6, L0776: 5, L0758: 5, L0759: 5, H0141: 4, H0585: 4, S0360: 4, L0770: 4, L0771: 4, L0775: 4, S0374: 4, L0756: 4, L0763: 3, L0764: 3, L0766: 3, L0806: 3, L0751: 3, L0749: 3, H0668: 3, H0543: 3, H0295: 2, H0638: 2, S0222: 2, S0210: 2, L0662: 2, L0774: 2, L0783: 2, L0792: 2, H0144: 2, S0152: 2, S0406: 2, L0748: 2, L0750: 2, L0757: 2, H0542: 2, H0624: 1, H0171: 1, T0002: 1, H0294: 1, S0218: 1, S0430: 1, H0656: 1, H0341: 1, H0661: 1, H0228: 1, S0348: 1, S0376: 1, S0444: 1, S0408: 1, S0045: 1, S0278: 1, H0431: 1, H0586: 1, H0587: 1, H0497: 1, H0486: 1,		

					H0599: 1, H0196: 1, T0110: 1, H0327: 1, H0009: 1, L0157: 1, H0083: 1, H0375: 1, H0594: 1, H0188: 1, H0687: 1, S0003: 1, H0252: 1, H0428: 1, H0031: 1, H0553: 1, H0400: 1, H0591: 1, T0067: 1, H0264: 1, H0059: 1, S0386: 1, T0041: 1, H0494: 1, H0625: 1, S0438: 1, H0641: 1, H0646: 1, S0144: 1, S0344: 1, L0520: 1, L0769: 1, L0638: 1, L0761: 1, L0373: 1, L0768: 1, L0383: 1, L0666: 1, L0664: 1, H0547: 1, H0670: 1, S0328: 1, S0146: 1, H0436: 1, S3012: 1, L0744: 1, L0740: 1, L0752: 1, L0753: 1, H0445: 1, H0653: 1 and H0667: 1.		
HWLOU33	1054790	809	3 - 401	2984	AR096: 3, AR052: 2, AR089: 2, AR060: 2, AR061: 1, AR033: 1, AR053: 1, AR055: 1,		

					AR039: 0, AR104: 0 S0444: 5, S0360: 4, S0408: 3, H0625: 3, H0436: 3, S0358: 2, H0641: 2, L0803: 2, S0374: 2, H0656: 1, H0662: 1, S0420: 1, S0442: 1, S0354: 1, S0376: 1, H0392: 1, H0427: 1, H0457: 1, H0538: 1, H0547: 1, H0660: 1, H0648: 1, H0672: 1, S0378: 1, S0192: 1, H0423: 1 and H0422: 1.		
HKZBM58	1054812	810	33 - 584	2985	Leu-25 to Arg-30, Glu-41 to Thr-56, Met-74 to Asn-81, Tyr-108 to Thr-116, Asp-126 to Gly-131, Met-141 to Asp-149, Pro-170 to Tyr-184.	L0748: 19, S0372: 12, L0747: 12, L0750: 9, S0408: 7, L0752: 7, L0731: 7, L0758: 7, H0031: 6, L0439: 6, L0740: 6, L0769: 5, L0757: 5, L0471: 4, L0065: 4, H0672: 4, H0543: 4, H0341: 3, H0318: 3, H0616: 3, H0413: 3, L0771: 3, L0803: 3, L0790: 3, H0547: 3, H0689: 3, H0658: 3, S0406: 3, H0436: 3, L0779: 3,	

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		H0013: 1, L0021: 1, H0599: 1, T0082: 1, S0474: 1, H0581: 1, H0052: 1, H0251: 1, T0110: 1, H0597: 1, H0327: 1, H0545: 1, H0178: 1, H0373: 1, S0320: 1, L0171: 1, H0266: 1, H0084: 1, H0271: 1, H0687: 1, S0003: 1, S0214: 1, H0644: 1, H0181: 1, L0055: 1, L0455: 1, H0163: 1, H0040: 1, H0551: 1, H0412: 1, S0038: 1, H0100: 1, T0041: 1, H0494: 1, H0560: 1, H0561: 1, H0509: 1, S0150: 1, L0598: 1, H0529: 1, L0763: 1, L0637: 1, L0646: 1, L0804: 1, L0774: 1, L0776: 1, L0659: 1, L0526: 1, L0518: 1, L0519: 1, L0789: 1, L0666: 1, S0374: 1, H0519: 1, H0684: 1, H0660: 1, H0666: 1, H0648: 1, H0522: 1, S0146: 1,				

						H0555: 1, S0028: 1, L0742: 1, L0753: 1, H0445: 1, H0595: 1, S0434: 1, L0592: 1, L0485: 1, L0608: 1, S0194: 1 and L0600: 1.		
HTEOV06	1054813	811	311 - 799	2986	Glu-12 to Thr-27, Met-45 to Asn-52, Tyr-79 to Thr-87, Asp-97 to Tyr-103, Met-120 to Asp-128, Pro-149 to Tyr-163.	L0747: 2, H0556: 1, S0134: 1, H0341: 1, S0444: 1, H0013: 1, H0575: 1, H0050: 1, H0687: 1, H0628: 1, H0090: 1, H0616: 1, H0551: 1, S0440: 1, H0710: 1, L0748: 1, L0740: 1 and S0434: 1.		
HAMGH34	1055012	812	1446 - 661	2987	Thr-8 to Ala-15, Lys-29 to Ser-39, Lys-44 to Asn-52, Gly-61 to Pro-68.	H0560: 1, S0426: 1, L0776: 1, L0545: 1, L0588: 1, L0591: 1 and H0542: 1.		
HTEHP29	1055174	813	889 - 305	2988	Gly-1 to His-8, Pro-13 to Asn-30.	L0483: 6, L0749: 5, L0659: 4, L0766: 3, L0591: 3, H0038: 2, L0769: 2, L0665: 2, L0438: 2, H0539: 2, L0758: 2, L0759: 2, L0588: 2, H0650: 1, H0664: 1, S0360: 1, S0003: 1, H0615: 1, H0553: 1, H0644: 1, H0169: 1, S0438: 1,		

					S0422: 1, L0770: 1, L0662: 1, L0804: 1, L0776: 1, L0666: 1, S0374: 1, S0310: 1, H0520: 1, S0126: 1, L0748: 1, L0439: 1, L0747: 1 and L0757: 1.		
HNOJJ32	1055248	814	532 - 1914	2989	Gln-2 to Asp-7, Lys-34 to Arg-53, Gly-61 to Glu-70.	H0046: 13, L0439: 6, S0360: 3, H0024: 3, L0769: 3, L0805: 3, L0748: 3, L0749: 3, H0624: 2, H0100: 2, H0520: 2, S0436: 2, L0592: 2, H0685: 1, H0717: 1, H0661: 1, H0664: 1, H0449: 1, S0420: 1, S0376: 1, S0007: 1, S0476: 1, S0300: 1, L0717: 1, H0013: 1, H0156: 1, L0021: 1, H0575: 1, S0010: 1, S0474: 1, L0738: 1, H0178: 1, H0018: 1, S6028: 1, H0188: 1, H0687: 1, H0252: 1, H0428: 1, H0553: 1, S0036: 1, H0038: 1, H0264: 1, S0038: 1, H0561: 1, S0450: 1, S0422: 1,		

					S0002: 1, L5566: 1, L0803: 1, L0651: 1, L0776: 1, L0789: 1, S0330: 1, S0332: 1, H0704: 1, S0406: 1, L0740: 1, L0780: 1, L0758: 1, L0759: 1, H0595: 1, S0434: 1, L0595: 1, S0026: 1, H0543: 1, H0423: 1 and H0008: 1.			134790, 191044, 600040, 600138
HFPHF52	1055304	815	2 - 1333	2990	Ala-1 to Phe-8, Glu-16 to Gly-52, Ser-64 to Glu-80, Leu-94 to Lys-99, Ser-123 to Glu-136, His-157 to Ser-164, Lys-179 to Pro-190, Arg-220 to Glu-226, Phe-244 to Arg-252, Lys-277 to Thr-288, Glu-305 to Gly-310, Glu-328 to Glu-334, Pro-390 to Ala-401, Pro-411 to Gln-417.	L0748: 18, L0754: 14, L0759: 11, S0222: 8, H0144: 8, H0520: 6, L0742: 6, H0013: 5, L0749: 5, H0547: 4, L0602: 4, L0777: 4, H0170: 3, H0393: 3, H0428: 3, H0553: 3, L0520: 3, L0747: 3, H0624: 2, S0346: 2, L0471: 2, H0615: 2, H0644: 2, S0150: 2, H0538: 2, L0626: 2, L0794: 2, L0650: 2, L0805: 2, L0438: 2, L0439: 2, L0751: 2, L0756: 2, L0780: 2, L0755: 2, L0682: 2, L0594: 2, L0718: 2,	19q13.4		

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HBNMF62	1055381	816	266 - 679	2991	Pro-13 to Gly-25, Arg-47 to Gly-54, Pro-74 to Lys-81, His-87 to Trp-93, Glu-107 to Arg-137.	AR089: 2, AR052: 2, AR055: 2, AR039: 1, AR060: 1, AR096: 1, AR033: 1, AR053: 1, AR061: 1, AR104: 0 L0754: 7, L0748: 4, S0007: 3, L0771: 3, L0749: 3, L0750: 3, L0600: 3, L0717: 2, H0618: 2, H0046: 2, H0561: 2, S0422: 2,		

					L0763: 2, L0637: 2, L0794: 2, L0659: 2, H0660: 2, L0439: 2, L0755: 2, T0002: 1, H0583: 1, H0671: 1, S0354: 1, S6016: 1, H0586: 1, L0021: 1, H0052: 1, S0051: 1, T0010: 1, H0083: 1, H0553: 1, H0135: 1, H0063: 1, H0633: 1, L0639: 1, L0646: 1, L0649: 1, L0375: 1, L0655: 1, L0545: 1, L0647: 1, L0664: 1, L0665: 1, H0670: 1, H0672: 1, S0378: 1, H0696: 1, L0751: 1, L0752: 1, L0758: 1, L0759: 1, L0596: 1, L0608: 1 and H0423: 1.	15q22.33-q24.1	151670, 231680, 276700, 600374, 601780
HTPHO72	1055426	817	2 - 1048	2992	Gly-8 to Arg-14, Pro-24 to Arg-29, Leu-64 to Arg-73, His-91 to Arg-97, Tyr-141 to Thr-148, Glu-153 to Met-158, Asp-173 to Arg-180, Lys-185 to Pro-199, Glu-228 to Asp-235,	H0547: 8, L0666: 6, S0026: 6, L0803: 5, L0439: 5, L0740: 5, L0754: 5, L0758: 5, L0362: 5, S0242: 5, H0038: 4, S0440: 4, H0529: 4, L0800: 4, L0662: 4, H0648: 4, L0742: 4, L0752: 4,				

Leu-244 to Glu-258, Lys-264 to Pro-281, Asn-310 to Ser-316, Glu-331 to Leu-349.	L0717: 3, H0550: 3, H0251: 3, H0622: 3, H0553: 3, L0598: 3, L0646: 3, L0794: 3, L0517: 3, H0144: 3, L0438: 3, L0757: 3, L0785: 2, S0212: 2, S0358: 2, S0360: 2, H0013: 2, H0052: 2, H0150: 2, S0003: 2, H0644: 2, H0059: 2, L0520: 2, L0766: 2, L0804: 2, L0806: 2, L0659: 2, H0520: 2, H0593: 2, H0658: 2, S0330: 2, H0521: 2, L0747: 2, L0750: 2, L0756: 2, L0608: 2, H0422: 2, H0170: 1, H0171: 1, H0149: 1, H0713: 1, H0125: 1, S0418: 1, S0376: 1, S0408: 1, H0580: 1, S0045: 1, H0549: 1, S0222: 1, H0612: 1, H0600: 1, H0586: 1, H0574: 1, H0632: 1, L0021: 1, H0575: 1, H0004: 1, L0109: 1, L0738: 1, H0530: 1,					

HOPKL18	1055439	818	2 - 1438	2993	Glu-35 to Pro-41, Ala-55 to Arg-67,	L0041: 1, N0006: 1, H0014: 1, L0163: 1, S0051: 1, H0266: 1, S0214: 1, H0615: 1, H0428: 1, T0006: 1, H0674: 1, H0068: 1, S0036: 1, H0616: 1, H0551: 1, H0100: 1, H0494: 1, H0560: 1, S0472: 1, H0646: 1, L0770: 1, L0639: 1, L0761: 1, L0772: 1, L0773: 1, L0653: 1, L0629: 1, L0657: 1, L0529: 1, L0665: 1, S0374: 1, H0519: 1, H0682: 1, H0659: 1, H0670: 1, H0666: 1, H0672: 1, H0539: 1, S0380: 1, S0404: 1, S0406: 1, H0436: 1, H0478: 1, H0627: 1, S0028: 1, L0777: 1, L0780: 1, L0755: 1, L0731: 1, S0196: 1, H0542: 1, H0423: 1, S0424: 1, L0600: 1 and H0352: 1.	L0754: 95, L0755: 38, H0545: 20, H0617: 14,	22q11.23	123620, 600850

				Ala-82 to Lys-87, Gly-94 to Asp-100, Lys-175 to Asp-181, Asp-185 to Trp-190, Gly-193 to Asp-199, Leu-247 to Trp-252, Pro-278 to Asp-283, Arg-395 to Phe-402, Pro-404 to Asp-410, Pro-412 to Trp-420, Gly-443 to Asp-450.	L0751: 12, H0622: 11, L0731: 10, L0659: 8, L0777: 7, L0759: 7, S0360: 6, H0544: 5, L0764: 5, L0748: 5, H0546: 4, L0750: 4, L0780: 4, L0603: 4, H0620: 3, H0644: 3, H0606: 3, H0059: 3, L0771: 3, L0766: 3, L0806: 3, L0665: 3, H0684: 3, H0618: 2, H0086: 2, H0181: 2, L0644: 2, L0375: 2, L0666: 2, L0664: 2, L0744: 2, L0747: 2, L0779: 2, L0752: 2, L0757: 2, L0758: 2, L0605: 2, H0624: 1, H0171: 1, H0661: 1, H0662: 1, S0046: 1, H0549: 1, H0251: 1, H0012: 1, T0003: 1, H0039: 1, H0553: 1, H0316: 1, H0040: 1, H0477: 1, S0352: 1, L0763: 1, L0769: 1, L0796: 1, L0761: 1, L0772: 1, L0773: 1, L0648: 1, L0807: 1,

						L0658: 1, L0663: 1, H0658: 1, S0332: 1, H0555: 1, L0749: 1 and L0597: 1.		
HBAAE59	1055446	819	807 - 145	2994		L0748: 5, L0747: 5, L0766: 3, L0439: 3, L0749: 3, L0752: 3, L0717: 2, L0763: 2, L0772: 2, L0776: 2, L0753: 2, L0731: 2, L0758: 2, L0605: 2, H0580: 1, S0222: 1, L0022: 1, L0157: 1, H0014: 1, H0622: 1, H0617: 1, H0040: 1, H0616: 1, L0435: 1, T0041: 1, S0426: 1, L0598: 1, L0369: 1, L0373: 1, L0764: 1, L0773: 1, L0662: 1, L0768: 1, L0387: 1, L0809: 1, L0529: 1, L0438: 1, H0659: 1, S0404: 1, H0555: 1, S0028: 1, L0742: 1, L0779: 1, L0777: 1, L0755: 1, L0588: 1, L0599: 1, L0604: 1, S0276: 1 and H0422: 1.	3p21.3	116806, 120120, 120120, 120120, 120436, 120436, 120436, 138320, 168468, 182280, 600163
HTXKD84	1055467	820	1845 -	2995	Lys-18 to Glu-24,	L0439: 13, H0424: 8,		

	1177			Leu-45 to Ile-54, Ala-105 to Thr-114, Pro-123 to Leu-130, Leu-167 to Lys-175, Pro-190 to Pro-195, Val-211 to Ser-218.	H0547: 8, L0751: 7, L0777: 6, H0556: 4, H0617: 4, L0435: 4, L0776: 4, L0750: 4, H0253: 3, H0135: 3, H0038: 3, L0774: 3, L0666: 3, S0206: 3, L0605: 3, H0543: 3, H0423: 3, H0624: 2, S0418: 2, L0005: 2, S0007: 2, H0208: 2, S0132: 2, H0013: 2, T0010: 2, H0290: 2, H0213: 2, H0494: 2, L0766: 2, L0659: 2, L0663: 2, L0665: 2, L0438: 2, H0520: 2, H0682: 2, L0743: 2, L0748: 2, L0779: 2, L0758: 2, L0592: 2, H0265: 1, S0040: 1, H0295: 1, S0218: 1, H0657: 1, H0656: 1, S0001: 1, H0402: 1, H0459: 1, S0420: 1, S0046: 1, H0351: 1, H0602: 1, H0586: 1, L0622: 1, H0101: 1, S0280: 1, H0599: 1, H0575: 1, T0082: 1,		

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HTXRR82	1055480	821	408 - 1364	2996	Val-7 to Glu-20, Pro-99 to Lys-105, Glu-113 to Val-119, Ser-136 to Trp-142, Ala-159 to His-164.	H0556: 2, H0135: 2, S0040: 1, H0657: 1, H0586: 1, H0013: 1, H0428: 1, L0761: 1, L0773: 1, L0768: 1, L0774: 1, L0775: 1, H0521: 1, L0748: 1, L0749: 1, L0759: 1 and H0543: 1.		
HAIBU62	1055582	822	1 - 1518	2997	Arg-44 to Val-54.	L0439: 9, S0136: 7, L0777: 3, L0779: 2, H0624: 1, H0170: 1, H0686: 1, H0656: 1, S0408: 1, S0132: 1, H0374: 1, H0266: 1, H0551: 1, L0521: 1, L0662: 1, L0794: 1, L0766: 1, L0381: 1, L0803: 1, L0659: 1, L0809: 1, L0663: 1, L0438: 1, H0659: 1, H0539: 1, L0752: 1, L0592: 1 and L0595: 1.		

HDTAY29	1055632	823	1276 - 686	2998		L0731: 5, H0038: 3, L0766: 2, H0683: 2, H0670: 2, H0660: 2, L0747: 2, L0749: 2, L0779: 2, L0758: 2, H0583: 1, S0420: 1, S0360: 1, H0486: 1, H0156: 1, H0599: 1, H0581: 1, H0597: 1, H0247: 1, H0494: 1, H0647: 1, S0210: 1, L0794: 1, L0804: 1, H0436: 1, S0027: 1, L0596: 1, L0485: 1 and H0542: 1.		
HCOQD79	1055767	824	42 - 689	2999	Trp-8 to Gly-16, Ala-18 to Ala-26, His-28 to His-41, Pro-79 to Glu-85.	L0769: 3, H0484: 1, H0546: 1, H0178: 1, H0553: 1, S0366: 1, L0770: 1, L0761: 1, L0772: 1, L0372: 1, L0374: 1, L0645: 1, L0771: 1, L0766: 1, L0653: 1, L0666: 1, L0664: 1, H0670: 1, S0406: 1, L0777: 1, L0601: 1 and S0446: 1.	16p13.3	141750, 141800, 141800, 141800, 141800, 141850, 141850, 141850, 141850, 141850, 156850, 186580, 191092, 600140, 600273,

HAMHN12	1055899	825	2 - 1129	3000	Ala-20 to Arg-28, Gly-37 to Thr-47, Pro-50 to Asn-56, Pro-77 to Ala-82, Thr-114 to Ala-119, Pro-133 to Thr-141, Gly-150 to Cys-161, Pro-165 to Asn-177, Thr-179 to Gly-188, Glu-198 to Cys-212, Ile-216 to Arg-222, Val-254 to Arg-265, Ser-271 to Leu-276, Lys-281 to Asn-286, Pro-341 to Lys-346, Ala-349 to Met-355.	AR096: 626, AR039: 392, AR089: 360, AR053: 315, AR060: 315, AR033: 157, AR104: 153, AR061: 115, AR055: 31 L0518: 7, L0777: 6, L0809: 5, L0744: 4, L0649: 2, L0659: 2, H0658: 2, L0748: 2, L0747: 2, L0750: 2, H0411: 1, H0013: 1, L0021: 1, H0123: 1, H0050: 1, H0163: 1, H0560: 1, L0763: 1, L0770: 1, L0769: 1, L0761: 1, L0662: 1, L0375: 1, L0776: 1, L0439: 1, L0749: 1, L0779: 1 and L0599: 1.		601313, 601785
HODIY67	1056000	826	2 - 1957	3001	Ala-27 to Lys-35, Arg-63 to Ile-70, Tyr-100 to Ala-105, Ser-159 to Thr-168.	L0766: 6, L0776: 6, L0777: 5, L0803: 4, L0731: 3, L0759: 3, S0222: 2, H0013: 2, L0157: 2, L0805: 2, L0666: 2, H0521: 2, L0740: 2, L0361: 2, H0170: 1, H0171: 1,	15q	

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					Asn-6 to Val-11.	AR096: 2, AR060: 1, AR089: 1, AR039: 0, AR033: 0, AR104: 0, AR055: 0, AR061: 0 L0747: 16, L0758: 8, L0751: 7, L0774: 6, H0617: 5, L0803: 5, L0809: 5, L0794: 4,	
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		827					
	1056097						
HNTRS57							

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HUKFL74	1056102	828	1 - 177	3003	Arg-13 to Glu-21, Ser-36 to Gly-57.	L0754: 8, L0741: 5, L0748: 5, L0756: 5, H0550: 4, L0751: 4, L0758: 4, H0265: 3, H0556: 3, L0806: 3, S0418: 2, T0010: 2, S0002: 2, L0777: 2, L0755: 2, H0445: 2, L0603: 2, H0170: 1,		

HTEBF05	1056104	829	3004	Arg-7 to Thr-15, Leu-23 to Asp-30, Glu-37 to Val-48, Thr-54 to Pro-64,	AR061: 3, AR039: 3, AR089: 3, AR096: 2, AR053: 2, AR060: 2, AR055: 1, AR104: 1,	3p25		154705, 193300, 193300, 227646,
		3 - 344			L0615: 1, H0159: 1, S0040: 1, H0483: 1, H0254: 1, S0410: 1, H0734: 1, H0549: 1, H0574: 1, H0485: 1, H0013: 1, H0618: 1, H0052: 1, H0597: 1, H0150: 1, H0408: 1, H0416: 1, H0188: 1, H0252: 1, H0030: 1, H0644: 1, S0366: 1, H0634: 1, T0067: 1, H0059: 1, T0042: 1, H0560: 1, H0647: 1, L0763: 1, L0371: 1, L0637: 1, L0667: 1, L0800: 1, L0764: 1, L0771: 1, L0767: 1, L0768: 1, L0803: 1, L0776: 1, L0659: 1, L0789: 1, L0532: 1, L0665: 1, H0144: 1, H0698: 1, S0126: 1, S0392: 1, L0740: 1, L0747: 1, L0779: 1, L0757: 1 and S0436: 1.			

				Thr-103 to Thr-108.	AR033: 1 L0665: 4, H0659: 2, H0553: 1, H0038: 1, L0659: 1, L0777: 1, L0758: 1 and L0601: 1.		253260, 278720, 601154, 601253, 602011
HOPKD19	1056275	830	158 - 1084	3005	Ala-95 to Ser-101, Pro-103 to Asp-108, Glu-177 to Lys-183, Lys-226 to Lys-234, Leu-252 to Gly-257, Gln-293 to Ser-301.	H0556: 29, L0748: 28, L0745: 18, H0620: 16, H0040: 15, L0595: 14, H0547: 13, S0358: 12, L0777: 12, H0559: 11, S0046: 9, S0440: 9, L0740: 9, H0265: 8, H0494: 8, L0751: 8, H0341: 7, S0408: 7, L0646: 7, S0126: 7, L0746: 7, L0747: 7, H0543: 7, H0657: 6, H0318: 6, H0052: 6, H0135: 6, L0775: 6, L0655: 6, L0666: 6, H0519: 6, S0406: 6, S0045: 5, H0486: 5, H0581: 5, H0024: 5, L0375: 5, L0659: 5, H0520: 5, S0206: 5, L0750: 5, L0752: 5, T0002: 4, H0717: 4, H0484: 4, S0376: 4, H0497: 4, H0257: 4, H0545: 4, H0644: 4,	12p13	103950, 120580, 131440, 139130, 142680, 176260, 190450, 200990, 216950, 600228, 600414, 600618, 602096

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HLICR58	1056290	831	3 - 932	3006	Ser-48 to Asp-53, Asn-63 to Arg-69, Lys-77 to Lys-82.	AR061: 7, AR089: 7, AR053: 5, AR060: 5, AR033: 4, AR096: 4, AR055: 4, AR039: 3, AR104: 3, AR052: 0 L0750: 33, L0588: 29, H0341: 22, L0361: 22, L0748: 19, H0657: 18, H0648: 18, S0360: 17, H0670: 17, S0358: 16, H0170: 15, H0144: 14, L0752: 14, L0757: 13, L0758: 13, S0007: 12, H0494: 12, L0520: 12, H0543: 12, L0471: 11, L0521: 11, L0767: 11, H0659: 11, L0749: 11, L0783: 10, H0305: 9, S0046: 9, H0615: 9, L0754: 9, H0624: 8, H0014: 8, L0663: 8, S0126: 8, H0672: 8, L0591: 8, L0604: 8, H0136: 8, S0045: 7, H0031: 7, H0633: 7, H0436: 7, S0028: 7, H0125: 6, S0132: 6, H0411: 6, H0392: 6, H0574: 6, T0109: 6, S0438: 6, L0762: 6,		

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					H0641: 1, H0647: 1, S0144: 1, S0142: 1, L0640: 1, L0637: 1, L0646: 1, L0764: 1, L0363: 1, L0794: 1, L0766: 1, L0499: 1, L0522: 1, L0774: 1, L0775: 1, L0651: 1, L0378: 1, L0805: 1, L0509: 1, L0652: 1, L0555: 1, L0513: 1, L0656: 1, L0559: 1, L0384: 1, L0809: 1, L0529: 1, L0368: 1, L0532: 1, H0691: 1, H0520: 1, H0519: 1, H0684: 1, H0651: 1, S0454: 1, S0013: 1, S0406: 1, H0478: 1, L0744: 1, L0439: 1, L0731: 1, H0343: 1, L0592: 1, L0485: 1, L0608: 1, L0593: 1, H0217: 1, H0216: 1, H0008: 1 and H0352: 1.		
HISBE12	1056376	832	53 - 1276	3007	Leu-76 to Lys-84, Lys-90 to Leu-97, His-115 to Thr-120, Pro-128 to Trp-136, Asp-393 to Ala-403.	AR096: 6, AR060: 6, AR089: 5, AR052: 5, AR053: 3, AR033: 3, AR055: 1, AR061: 1, AR104: 1, AR039: 0		

						H0539: 8, H0046: 3, H0039: 2, H0553: 2, H0090: 2, L0750: 2, L0605: 2, S0282: 1, H0431: 1, H0036: 1, H0421: 1, H0196: 1, T0003: 1, S6028: 1, H0252: 1, H0031: 1, H0111: 1, H0591: 1, H0412: 1, T0068: 1, S0044: 1, L0752: 1, H0445: 1 and L0581: 1.		
HAJAH48	1056400	833	1 - 210	3008	Lys-10 to Ser-16, Pro-30 to Ala-36.	H0635: 1 and H0561: 1.		
HSKJC61	1056407	834	210 - 1436	3009	His-8 to Gly-18, Pro-58 to Lys-68, Gln-109 to Lys-115, Val-175 to Pro-180, Ser-221 to Asp-228, Thr-256 to His-261, Asp-287 to Asp-294, Thr-321 to Asp-328, Asn-349 to Ile-357, Phe-376 to Glu-386, Pro-396 to Ser-409.	AR089: 3, AR055: 3, AR096: 3, AR060: 2, AR061: 2, AR053: 2, AR039: 2, AR104: 2, AR033: 2 S0132: 2, S0358: 1, H0615: 1, T0023: 1, H0435: 1, S3014: 1, L0740: 1, L0591: 1 and L0362: 1.		
HEEBK29	1056454	835	1015 - 3060	3010			21q22.3	120220, 120240, 123580, 151385,

							171860, 190685, 236100, 236200, 240300, 267750, 600065, 601072, 601145
					L0751: 25, L0665: 23, H0656: 12, L0743: 10, H0617: 9, H0620: 8, L0657: 8, H0318: 7, H0658: 7, H0650: 5, H0483: 5, H0657: 4, H0012: 4, H0024: 4, H0689: 4, H0341: 3, H0484: 3, H0618: 3, H0253: 3, H0688: 3, H0659: 3, H0670: 3, L0603: 3, S0358: 2, H0052: 2, H0615: 2, H0264: 2, H0100: 2, L0763: 2, L0637: 2, L0651: 2, L0659: 2, L0791: 2, L0663: 2, H0555: 2, L0748: 2, L0779: 2, S0282: 1, H0255: 1, H0306: 1, S0045: 1, L0717: 1,		
				3011			
			1 - 1182				
		836					
	1056617						
HCHMM19							

					L0394: 1, H0549: 1, S6016: 1, S0222: 1, H0455: 1, H0635: 1, H0427: 1, S0280: 1, H0042: 1, H0122: 1, H0123: 1, H0050: 1, L0163: 1, H0356: 1, H0399: 1, H0594: 1, H0252: 1, H0553: 1, H0181: 1, H0673: 1, L0638: 1, L0639: 1, L0662: 1, L0766: 1, L0804: 1, L0666: 1, H0690: 1, H0682: 1, H0684: 1, H0435: 1, H0660: 1, H0672: 1, L0754: 1, L0758: 1, S0458: 1, S0456: 1 and H0352: 1.		
HE8NG02	1056625	837	85 - 1041	3012	Thr-2 to Asn-10, Ser-72 to Lys-78, Gly-95 to Thr-101, Phe-134 to Ile-147, Lys-163 to Lys-172, Gln-199 to Glu-206, Ala-212 to Trp-224, Lys-230 to His-236, Arg-238 to Glu-244, Asp-249 to Gly-254, Met-260 to Tyr-266,	AR052: 4, AR039: 3, AR055: 3, AR060: 3, AR061: 3, AR089: 2, AR033: 2, AR053: 2, AR096: 1, AR104: 1 H0624: 4, H0170: 3, H0328: 3, H0329: 2, H0013: 2, L0747: 2, L0777: 2, H0046: 1 and L0759: 1.		

					Arg-272 to Arg-279.			
HWHKD22	1056654	838	1287 - 601	3013	Thr-32 to His-38, Thr-46 to Asn-55, Asn-158 to Gly-165, Thr-191 to Asn-199.	AR096: 14, AR089: 14, AR033: 10, AR061: 8, AR060: 8, AR052: 7, AR055: 6, AR053: 5, AR104: 3, AR039: 2 L0766: 3, L0659: 3, L0744: 3, L0794: 2, L0805: 2, L0665: 2, H0648: 2, H0305: 1, H0586: 1, H0599: 1, H0428: 1, H0551: 1, S0038: 1, S0422: 1, L0763: 1, L0637: 1, L0662: 1, L0803: 1, L0804: 1, L0806: 1, L0776: 1, L0655: 1, L0661: 1, L0787: 1, S0374: 1, H0520: 1, L0740: 1, L0750: 1, L0777: 1, L0752: 1, L0759: 1 and L0592: 1.		
HOCPJ87	1056666	839	22 - 1125	3014	Glu-5 to His-15, Phe-20 to Lys-41, Gln-43 to Tyr-49, Asn-146 to Thr-152, His-157 to Phe-164, Arg-181 to Gly-191, Lys-219 to Asn-224,	L0777: 6, L0766: 5, L0747: 5, L0744: 4, H0660: 3, L0750: 3, H0657: 2, L0769: 2, S0298: 1, S0360: 1, H0730: 1, H0592: 1, H0544: 1, H0629: 1,	18p11.3-p11.2	142946, 202200

				Lys-261 to Leu-278, Thr-291 to Asn-297, Glu-302 to Thr-312, Ser-316 to Thr-342, Gln-344 to Asp-367.	S0334: 1, S0003: 1, H0591: 1, H0641: 1, L0598: 1, H0529: 1, L0762: 1, L0502: 1, L0763: 1, L0372: 1, L0646: 1, L0644: 1, L0768: 1, L0775: 1, L0806: 1, L0527: 1, H0144: 1, L0438: 1, H0690: 1, H0658: 1, H0648: 1, S0146: 1, S0406: 1, L0740: 1, L0751: 1, L0749: 1, L0779: 1, L0755: 1, L0731: 1, L0758: 1, L0759: 1, S0434: 1 and H0506: 1.		
HAAAA59	1056671	840	3 - 2765	3015	Lys-6 to Ser-15, Ser-23 to Ala-28, Thr-81 to Gln-89, Gln-191 to Gly-198.	H0694: 92, L0766: 9, L0747: 8, S0126: 7, L0439: 7, H0266: 6, L0776: 6, L0666: 6, L0748: 6, L0759: 6, H0622: 5, H0038: 5, H0623: 5, L0763: 5, L0659: 5, H0656: 4, S0358: 4, S0476: 4, H0486: 4, H0013: 4, L0598: 4, H0529: 4, L0662: 4, L0805: 4, L0655: 4, L0663: 4,		

		H0521: 4, S0434: 4, H0657: 3, H0497: 3, H0574: 3, H0328: 3, H0615: 3, H0644: 3, H0551: 3, L0770: 3, L0764: 3, L0665: 3, H0144: 3, S0374: 3, H0547: 3, H0659: 3, S0330: 3, L0752: 3, H0445: 3, S0436: 3, H0717: 2, H0638: 2, S0045: 2, L0717: 2, S0414: 2, H0485: 2, S0280: 2, H0156: 2, S0010: 2, H0032: 2, H0494: 2, S0440: 2, S0422: 2, L0667: 2, L0646: 2, L0768: 2, L0652: 2, L0438: 2, H0658: 2, H0539: 2, S0044: 2, H0555: 2, L0744: 2, L0751: 2, L0749: 2, L0777: 2, L0731: 2, L0758: 2, L0592: 2, L0581: 2, L0593: 2, H0653: 2, S0276: 2, H0543: 2, L0411: 1, H0556: 1, H0220: 1, H0738: 1, S0114: 1, T0049: 1,				

		H0583: 1, H0650: 1, S0116: 1, H0341: 1, S0212: 1, S0356: 1, S0354: 1, S0444: 1, S0360: 1, S0408: 1, H0722: 1, S0132: 1, H0619: 1, H0393: 1, H0437: 1, S0222: 1, H0431: 1, H0592: 1, H0586: 1, H0349: 1, H0036: 1, L0105: 1, T0048: 1, H0581: 1, H0374: 1, H0046: 1, H0123: 1, H0050: 1, L0471: 1, H0355: 1, S0250: 1, H0688: 1, H0029: 1, H0039: 1, L0483: 1, T0006: 1, H0553: 1, L0055: 1, H0169: 1, H0124: 1, H0068: 1, H0316: 1, H0591: 1, H0264: 1, H0268: 1, H0413: 1, H0056: 1, T0042: 1, S0016: 1, H0561: 1, S0438: 1, H0509: 1, S0150: 1, H0641: 1, H0646: 1, S0142: 1, S0344: 1, S0426: 1, L0371: 1, L0771: 1,			

						L0521: 1, L0649: 1, L0389: 1, L0803: 1, L0804: 1, L0775: 1, L0661: 1, L0629: 1, L0657: 1, L0367: 1, L0789: 1, L0664: 1, H0520: 1, H0519: 1, H0593: 1, H0689: 1, H0670: 1, H0672: 1, S0378: 1, H0518: 1, S0152: 1, S0350: 1, H0522: 1, H0704: 1, S0406: 1, S0390: 1, S0027: 1, L0756: 1, L0779: 1, L0780: 1, L0757: 1, L0596: 1, L0588: 1, L0589: 1, L0366: 1, S0011: 1, S0026: 1, H0665: 1, S0194: 1, H0423: 1, S0424: 1 and H0008: 1.	
HOSBJ18	1056672	841	422 - 2026	3016	Ile-15 to Lys-33, Phe-99 to Lys-104, Ile-107 to Cys-114.	L0779: 8, L0665: 6, L0731: 6, L0662: 4, L0663: 4, L0754: 4, H0486: 3, H0013: 3, S6028: 3, H0031: 3, L0598: 3, L0776: 3, L0666: 3, H0144: 3, S0126: 3, S0026: 3, S0214: 2, H0428: 2,	

		H0163: 2, H0090: 2, H0488: 2, L0649: 2, L0775: 2, H0660: 2, L0751: 2, L0756: 2, L0755: 2, L0758: 2, L0759: 2, L0596: 2, H0624: 1, S0046: 1, H0645: 1, H0586: 1, H0250: 1, H0156: 1, H0318: 1, T0071: 1, S0049: 1, H0457: 1, L0471: 1, H0057: 1, H0239: 1, H0266: 1, H0687: 1, S0003: 1, H0615: 1, H0553: 1, H0644: 1, H0316: 1, H0598: 1, H0591: 1, S0294: 1, S0150: 1, UNKWN: 1, L0763: 1, L0646: 1, L0766: 1, L0375: 1, L0527: 1, L0659: 1, L0518: 1, L0438: 1, H0593: 1, H0435: 1, H0648: 1, S0380: 1, S0152: 1, H0521: 1, H0627: 1, S0390: 1, L0745: 1, L0750: 1, L0777: 1, L0752: 1, L0362: 1 and H0543: 1.			

HUSGX12	1056736	842	2 - 838	3017	Arg-1 to Thr-6, Arg-86 to Gly-91, Ser-102 to Leu-107, Leu-111 to Arg-122, Arg-140 to Gly-145, Glu-170 to Ser-195, Pro-200 to Thr-221, Gly-234 to Asp-250.	L0750: 4, H0622: 3, L0792: 3, H0619: 2, H0050: 2, L0759: 2, H0624: 1, H0661: 1, L0005: 1, S0376: 1, S0360: 1, H0575: 1, H0597: 1, H0687: 1, H0412: 1, L0065: 1, L0761: 1, L0800: 1, L0794: 1, L0784: 1, L0807: 1, H0690: 1, H0672: 1, S0206: 1, L0748: 1, L0751: 1, L0747: 1, L0779: 1 and H0445: 1.	
HPDRG02	1056764	843	2 - 1405	3018		S0360: 18, L0794: 15, L0748: 13, L0740: 10, H0521: 9, L0666: 8, L0766: 7, L0439: 7, H0046: 6, H0031: 6, L0803: 6, L0783: 6, H0547: 6, S0436: 6, L0595: 6, H0318: 5, H0494: 5, L0769: 5, L0764: 5, L0779: 5, S0192: 5, H0486: 4, L0770: 4, H0658: 4, S0152: 4, L0751: 4, L0747: 4, L0750: 4, L0777: 4, L0757: 4,	7	

		S0242: 4, H0556: 3, S0408: 3, H0013: 3, H0620: 3, H0083: 3, S0250: 3, H0615: 3, H0213: 3, H0090: 3, H0268: 3, H0646: 3, L0800: 3, L0653: 3, L0809: 3, L0663: 3, H0689: 3, S3014: 3, L0749: 3, L0731: 3, L0596: 3, L0601: 3, H0657: 2, S0116: 2, H0341: 2, H0661: 2, S0418: 2, S0358: 2, S0045: 2, S0476: 2, H0393: 2, H0587: 2, H0574: 2, H0069: 2, T0048: 2, H0263: 2, H0544: 2, L0471: 2, H0673: 2, H0135: 2, H0591: 2, H0551: 2, H0412: 2, H0413: 2, S0440: 2, H0509: 2, H0131: 2, S0142: 2, S0002: 2, L0772: 2, L0662: 2, L5564: 2, L0655: 2, L0659: 2, L0647: 2, L0788: 2, L0664: 2, L0438: 2, H0519: 2, S0126: 2,				

		H0672: 2, H0696: 2, S0406: 2, S0027: 2, L0753: 2, S0434: 2, L0587: 2, L0599: 2, L0608: 2, S0196: 2, H0543: 2, H0265: 1, S0040: 1, H0295: 1, H0294: 1, S0218: 1, S0001: 1, H0638: 1, L0534: 1, L0562: 1, S0354: 1, S0410: 1, H0208: 1, S0046: 1, S0132: 1, S0278: 1, H0261: 1, H0549: 1, H0550: 1, S0222: 1, H0610: 1, H0497: 1, H0333: 1, H0632: 1, H0485: 1, H0270: 1, H0156: 1, L0021: 1, S0010: 1, H0581: 1, H0052: 1, H0085: 1, H0596: 1, L0040: 1, H0231: 1, H0546: 1, H0569: 1, H0050: 1, H0012: 1, H0024: 1, H0015: 1, H0594: 1, H0266: 1, H0688: 1, H0622: 1, H0424: 1, L0055: 1, H0038: 1, H0087: 1, T0067: 1,				

HKZBB48	1056767	844	230 - 1660	3019	Ser-6 to Asp-14, Asp-24 to Glu-32, Asn-56 to Gln-62, Pro-83 to Pro-92, Gly-152 to Glu-169,	L0754: 5, L0758: 5, L0777: 4, L0752: 4, H0574: 3, S0003: 3, L0803: 3, L0790: 3, L0666: 3, H0624: 2,	H0379: 1, H0264: 1, H0056: 1, H0561: 1, S0450: 1, S0150: 1, H0647: 1, S0144: 1, S0426: 1, L0640: 1, L0763: 1, L0638: 1, L0639: 1, L0637: 1, L0372: 1, L0771: 1, L0773: 1, L0649: 1, L0804: 1, L0650: 1, L0774: 1, L0776: 1, L0807: 1, L0657: 1, L0368: 1, L0791: 1, L0793: 1, L0665: 1, H0144: 1, L0352: 1, H0520: 1, H0435: 1, H0659: 1, H0670: 1, H0648: 1, S0330: 1, H0522: 1, H0631: 1, S0206: 1, L0752: 1, L0755: 1, L0758: 1, L0759: 1, S0260: 1, S0026: 1, H0542: 1, H0422: 1, H0506: 1 and H0008: 1.	5q23.3-q31.1	121050, 131400, 147061, 147575, 147575,

					Arg-376 to Lys-384, Glu-393 to Ser-406, Ser-441 to Gly-453.	S0358: 2, S0222: 2, L0369: 2, L0771: 2, L0768: 2, L0804: 2, L0774: 2, L0775: 2, L0776: 2, L0663: 2, H0539: 2, L0742: 2, L0748: 2, L0439: 2, L0750: 2, L0756: 2, L0779: 2, H0170: 1, L0002: 1, L0785: 1, S0356: 1, S0360: 1, H0580: 1, H0411: 1, H0437: 1, H0586: 1, H0497: 1, H0013: 1, L0021: 1, H0263: 1, H0050: 1, S0388: 1, H0060: 1, H0674: 1, H0090: 1, H0591: 1, L0564: 1, S0440: 1, L0648: 1, L0521: 1, L0794: 1, L0806: 1, L0655: 1, L0657: 1, L0783: 1, L0809: 1, L0789: 1, L0664: 1, H0144: 1, H0519: 1, H0689: 1, H0683: 1, H0704: 1, H0555: 1, L0740: 1, L0745: 1, L0749: 1, L0731: 1, L0759: 1 and L0601: 1.		147575, 153455, 159000, 179095, 181460, 192974, 192974, 600807, 601596, 602089

HHAWB19	1056774	845	3 - 1316	3020	Pro-1 to Pro-9.	S0418: 1, H0580: 1, S0278: 1, H0013: 1, H0046: 1 and H0547: 1.	1q42-q44	106150, 106150, 145260, 173870, 173870, 600759, 600996, 601744, 601975
HHATP38	1056786	846	3 - 650	3021	Arg-16 to Arg-22, Ser-52 to Lys-62, Ala-73 to Arg-78, Arg-153 to Leu-169, Arg-172 to Leu-195, Glu-203 to Arg-216.	AR104: 5, AR089: 5, AR060: 2, AR055: 2, AR096: 2, AR061: 1	11q13	102200, 106100, 131100, 131100, 131100, 133780, 147050, 153700, 161015, 164009, 168461, 168461, 168461, 180721, 180840, 191181, 193235, 209901, 232600, 259700, 259770,

								600045, 600319, 600528, 601884
HVVBE07	1056801	847	645 - 983	3022	Tyr-47 to Arg-58.	S0053: 3, H0551: 2, S0418: 1, S0046: 1, H0486: 1, H0355: 1, L0771: 1, H0672: 1, S0206: 1, L0605: 1 and S0276: 1.		
HKAHB85	1056804	848	1 - 831	3023	Val-212 to Phe-223.	L0731: 9, H0617: 7, L0769: 7, L0809: 6, L0806: 5, S0328: 5, L0745: 4, L0764: 3, L0754: 3, H0624: 2, S0360: 2, H0550: 2, H0333: 2, H0086: 2, H0011: 2, H0266: 2, H0615: 2, H0424: 2, H0494: 2, L0770: 2, L0794: 2, L0649: 2, L0803: 2, L0804: 2, L0774: 2, L0493: 2, L0666: 2, H0658: 2, L0742: 2, L0743: 2, L0747: 2, L0755: 2, L0757: 2, L0591: 2, L0593: 2, L0697: 2, S0424: 2, H0170: 1, H0556: 1, H0294: 1,	19p13.1	143890, 151440, 600173, 600276, 600310, 600310, 601604, 601843

		H0341: 1, H0484: 1, H0483: 1, S0358: 1, S0376: 1, S0007: 1, H0370: 1, H0013: 1, H0706: 1, H0618: 1, H0253: 1, H0052: 1, H0085: 1, H0545: 1, H0012: 1, H0620: 1, H0024: 1, S0051: 1, H0687: 1, H0213: 1, H0031: 1, H0553: 1, H0181: 1, L0455: 1, H0334: 1, H0509: 1, L0772: 1, L0800: 1, L0768: 1, L0766: 1, L0805: 1, L0653: 1, L0776: 1, L0807: 1, L0658: 1, L0512: 1, L0659: 1, L0526: 1, L0783: 1, L0368: 1, L0789: 1, L0790: 1, L0665: 1, H0690: 1, H0435: 1, H0660: 1, H0539: 1, S0152: 1, H0521: 1, S0406: 1, L0751: 1, L0750: 1, L0779: 1, L0780: 1, L0752: 1, L0758: 1, L0587: 1, L0592: 1, L0599: 1 and L0603: 1.			

HUSXA15	1056810	849	303 - 1	3024		S0212: 20, L0751: 14, L0663: 11, L0731: 11, H0083: 10, L0657: 10, L0666: 10, H0547: 10, H0550: 7, H0620: 6, L0769: 6, H0689: 6, H0123: 5, H0428: 5, L0662: 5, S0356: 4, H0059: 4, L0664: 4, H0520: 4, H0670: 4, L0581: 4, S0418: 3, L0717: 3, H0618: 3, H0494: 3, S0438: 3, L0770: 3, L0659: 3, H0683: 3, H0660: 3, L0747: 3, L0758: 3, S0434: 3, H0543: 3, H0624: 2, H0295: 2, H0341: 2, H0662: 2, S0358: 2, S0360: 2, H0675: 2, S0408: 2, H0251: 2, H0051: 2, H0594: 2, H0687: 2, H0615: 2, H0031: 2, H0413: 2, H0100: 2, L0637: 2, L0648: 2, L0803: 2, L0774: 2, L0783: 2, L0665: 2, S0374: 2, S0126: 2, H0658: 2, H0672: 2,	2q33-q34	100730, 118800, 123660, 135600, 157655, 186860, 201460, 205100, 213700, 262000, 600258, 601277, 601318

		S0378: 2, S0380: 2, S0406: 2, L0439: 2, L0759: 2, L0605: 2, H0352: 2, H0170: 1, H0686: 1, H0685: 1, H0294: 1, S0180: 1, S0298: 1, H0661: 1, H0664: 1, S0420: 1, S0442: 1, S0354: 1, S0376: 1, H0637: 1, H0329: 1, S0007: 1, H0208: 1, H0645: 1, H0549: 1, H0391: 1, H0392: 1, H0331: 1, H0632: 1, T0109: 1, H0575: 1, H0545: 1, H0009: 1, H0024: 1, H0057: 1, H0373: 1, H0188: 1, H0288: 1, H0286: 1, H0644: 1, H0617: 1, H0606: 1, H0087: 1, L0564: 1, S0440: 1, L0772: 1, L0374: 1, L0644: 1, L0794: 1, L0652: 1, L0653: 1, L0809: 1, L0543: 1, H0693: 1, H0593: 1, H0690: 1, H0682: 1, H0684: 1, H0666: 1, S0330: 1,			

						H0696: 1, H0555: 1, S0027: 1, L0748: 1, L0750: 1, L0779: 1, L0755: 1, H0445: 1, S0436: 1, L0597: 1, L0599: 1, H0542: 1 and S0384: 1.		
HNOCH54	1056839	850	1 - 1953	3025	Pro-8 to Glu-16, Lys-29 to Gly-34, Gly-85 to Glu-92, Lys-165 to Glu-172, Glu-180 to Ser-186, Ser-210 to Arg-215, Glu-278 to Gln-288, Lys-377 to Glu-383, Lys-405 to Gly-410, Lys-468 to Glu-474, Asn-483 to Arg-488, Gln-496 to Glu-502, Val-555 to Gly-561, Glu-611 to Pro-623, Lys-631 to Trp-638, Phe-641 to Gly-649.			
HOCPP16	1056856	851	1039 - 392	3026	Gly-20 to Tyr-30, Asn-40 to Glu-46, Ser-66 to Gly-75, Lys-85 to Gly-97, Glu-104 to Arg-115, Pro-135 to Pro-140, Pro-150 to Asn-159,	S0212: 20, L0751: 14, L0663: 11, L0731: 11, H0083: 10, L0657: 10, L0666: 10, H0547: 10, H0550: 7, H0620: 6, L0769: 6, H0689: 6, H0123: 5, H0428: 5,		

					Leu-167 to Glu-173, Ile-191 to Glu-196, Val-210 to Gln-216.	L0662: 5, S0356: 4, H0059: 4, L0664: 4, H0520: 4, H0670: 4, L0581: 4, S0418: 3, L0717: 3, H0618: 3, H0494: 3, S0438: 3, L0770: 3, L0659: 3, H0683: 3, H0660: 3, L0747: 3, L0758: 3, S0434: 3, H0543: 3, H0624: 2, H0295: 2, H0341: 2, H0662: 2, S0358: 2, S0360: 2, H0675: 2, S0408: 2, H0251: 2, H0051: 2, H0594: 2, H0687: 2, H0615: 2, H0031: 2, H0413: 2, H0100: 2, L0637: 2, L0648: 2, L0803: 2, L0774: 2, L0783: 2, L0665: 2, S0374: 2, S0126: 2, H0658: 2, H0672: 2, S0378: 2, S0406: 2, L0439: 2, L0605: 2, H0352: 2, H0170: 1, H0686: 1, H0685: 1, H0294: 1, S0180: 1, S0298: 1, H0661: 1, H0664: 1, S0420: 1,		

HNOAH83	1056862	852	3 - 848	3027	Val-2 to Val-7.	S0442: 1, S0354: 1, S0376: 1, H0637: 1, H0329: 1, S0007: 1, H0208: 1, H0645: 1, H0549: 1, H0391: 1, H0392: 1, H0331: 1, H0632: 1, T0109: 1, H0575: 1, H0545: 1, H0009: 1, H0024: 1, H0057: 1, H0373: 1, H0188: 1, H0288: 1, H0286: 1, H0644: 1, H0617: 1, H0606: 1, H0087: 1, L0564: 1, S0440: 1, L0772: 1, L0374: 1, L0794: 1, L0652: 1, L0653: 1, L0809: 1, L0543: 1, H0693: 1, H0593: 1, H0690: 1, H0682: 1, H0684: 1, H0666: 1, S0330: 1, S0380: 1, H0696: 1, H0555: 1, S0027: 1, L0748: 1, L0750: 1, L0779: 1, L0755: 1, L0759: 1, H0445: 1, S0436: 1, L0597: 1, L0599: 1, H0542: 1 and S0384: 1.	H0617: 18, H0545: 12,	11p15.5	125852,

				L0439: 11, L0743: 10, L0751: 10, H0295: 8, L0757: 8, S0212: 7, S0360: 7, L0662: 7, H0551: 6, H0494: 6, S0027: 6, L0779: 6, H0550: 5, H0575: 5, H0253: 5, H0039: 5, L0659: 5, H0521: 5, L0747: 5, S0408: 4, S0046: 4, H0427: 4, H0599: 4, H0546: 4, H0014: 4, L0764: 4, L0774: 4, L0438: 4, S0126: 4, H0672: 4, L0731: 4, S0434: 4, H0255: 3, H0662: 3, S0354: 3, S0358: 3, S0045: 3, H0370: 3, S0280: 3, H0309: 3, H0046: 3, H0266: 3, H0412: 3, H0413: 3, S0440: 3, H0509: 3, L0769: 3, L0775: 3, L0666: 3, H0520: 3, S0330: 3, H0539: 3, L0744: 3, L0777: 3, S0011: 3, S0192: 3, H0484: 2, H0661: 2, S0420: 2, S0356: 2,		126452, 126452, 141900, 141900, 141900, 141900, 141900, 141900, 142000, 142000, 142200, 142250, 142270, 176730, 176730, 176730, 190020, 191290, 192500, 192500, 194071, 194071, 204500, 600856, 601680, 602631, 602631

		S0376: 2, S0410: 2, H0580: 2, S0007: 2, H0208: 2, S0132: 2, S0278: 2, H0549: 2, H0592: 2, H0486: 2, H0706: 2, H0590: 2, S0474: 2, H0251: 2, H0204: 2, H0544: 2, L0163: 2, H0188: 2, H0687: 2, H0622: 2, H0040: 2, H0560: 2, S0142: 2, S0210: 2, L0637: 2, L0768: 2, L0651: 2, L0527: 2, L0782: 2, L0783: 2, L0528: 2, L0663: 2, S0374: 2, H0547: 2, H0651: 2, L0602: 2, H0522: 2, H0555: 2, L0740: 2, L0754: 2, L0758: 2, S0196: 2, H0542: 2, H0624: 1, H0265: 1, S0040: 1, S0342: 1, H0713: 1, H0294: 1, H0583: 1, S0180: 1, S0001: 1, H0663: 1, H0664: 1, S0418: 1, S0444: 1, H0675: 1, H0619: 1, H0392: 1, T0104: 1,				

		H0587: 1, H0333: 1, H0559: 1, L0623: 1, T0040: 1, H0013: 1, H0069: 1, H0108: 1, H0036: 1, H0196: 1, H0052: 1, H0085: 1, H0205: 1, H0150: 1, H0041: 1, H0009: 1, H0123: 1, H0012: 1, H0023: 1, H0024: 1, S0388: 1, S0051: 1, H0510: 1, H0594: 1, H0284: 1, H0286: 1, S0250: 1, H0688: 1, H0428: 1, T0023: 1, H0213: 1, H0030: 1, H0553: 1, L0142: 1, H0628: 1, H0181: 1, H0606: 1, H0674: 1, S0364: 1, H0135: 1, H0372: 1, H0087: 1, H0264: 1, H0269: 1, H0623: 1, H0059: 1, L0564: 1, H0625: 1, H0633: 1, H0646: 1, H0529: 1, L0770: 1, L3904: 1, L0772: 1, L0372: 1, L0800: 1, L0773: 1, L0533: 1, L0375: 1, L0376: 1,				

					L0806: 1, L0654: 1, L0629: 1, L0657: 1, L0656: 1, L0809: 1, L0647: 1, L0790: 1, L0665: 1, H0593: 1, H0689: 1, H0690: 1, H0435: 1, H0670: 1, S0328: 1, S0378: 1, S0380: 1, H0696: 1, S0406: 1, H0478: 1, H0631: 1, S3012: 1, S0028: 1, S0206: 1, L0750: 1, L0755: 1, L0759: 1, L0596: 1, L0597: 1, S0026: 1, H0665: 1, H0543: 1 and S0424: 1.	22q13.2-q13.31	188826, 250100, 250800, 250800
HE2OU10	1056875	853	79 - 480	3028	Gln-34 to Ala-45, Glu-47 to Leu-52, Lys-113 to Gln-121.	L0743: 4, L0749: 4, L0731: 4, H0265: 2, H0213: 2, H0169: 2, H0038: 2, H0543: 2, H0170: 1, H0556: 1, H0341: 1, H0661: 1, S0420: 1, S0360: 1, H0639: 1, H0438: 1, H0036: 1, H0253: 1, S0010: 1, H0052: 1, H0327: 1, H0530: 1, H0009: 1, L0471: 1, H0644: 1, L0055: 1,		

						S0144: 1, S0002: 1, L0775: 1, H0691: 1, H0659: 1, H0648: 1, S0350: 1, S3012: 1, L0748: 1, L0740: 1, L0754: 1, L0747: 1, L0750: 1, L0753: 1, L0755: 1, L0758: 1 and S0276: 1.		
HODGM46	1056927	854	884 - 738	3029	Ser-13 to His-19, Gly-41 to Arg-49.	H0615: 3		
HODFR44	1056990	855	2 - 469	3030	Arg-17 to Lys-33.	AR055: 28, AR053: 28, AR033: 26, AR052: 22, AR089: 20, AR061: 13, AR060: 13, AR039: 11, AR096: 10, AR104: 5 L0751: 4, L0439: 3, L0777: 3, L0779: 2, L0758: 2, H0650: 1, H0328: 1, H0615: 1, L0435: 1, L0769: 1, L0649: 1, L0650: 1, L0774: 1, L0376: 1, L0789: 1 and H0343: 1.		
HCHND12	1057009	856	100 - 333	3031	Arg-27 to Trp-35.	H0664: 9, H0370: 8, H0059: 8, H0483: 4, S0410: 4, L0751: 4, L0747: 4, L0750: 4, H0484: 3, L0664: 3,	17q11.2-17q12	144200, 148066, 148066, 148067, 148067,

				L0749: 3, H0661: 2, S0418: 2, S0408: 2, H0246: 2, H0615: 2, H0617: 2, L0637: 2, L0766: 2, L0659: 2, L0783: 2, L0665: 2, S0374: 2, H0682: 2, H0666: 2, L0754: 2, L0759: 2, L0596: 2, H0506: 2, H0624: 1, S0114: 1, S0420: 1, S0354: 1, S0358: 1, S0376: 1, H0675: 1, S0222: 1, H0156: 1, H0590: 1, H0196: 1, L0040: 1, H0597: 1, H0457: 1, H0188: 1, H0688: 1, H0622: 1, H0424: 1, H0030: 1, H0553: 1, H0644: 1, H0673: 1, H0124: 1, S0440: 1, S0472: 1, H0647: 1, L0640: 1, L0772: 1, L0764: 1, L0765: 1, L0650: 1, L0375: 1, L0776: 1, L0792: 1, L0666: 1, H0690: 1, H0435: 1, H0670: 1, H0648: 1, S0404: 1, L0755: 1,		148069, 154275, 162200, 162200, 180240, 182138, 239100, 600119, 600119, 600881, 601363, 601687, 601954, 602403

						L0731: 1, L0605: 1 and L0600: 1.		
HBHAC29	1057157	857	2 - 553	3032		S0051: 4, H0441: 3, S0036: 3, L0769: 3, L0438: 3, L0439: 3, H0687: 2, L0665: 2, S0031: 2, S6024: 1, S0029: 1, H0455: 1, H0052: 1, L0638: 1, L0639: 1, S0053: 1 and L0742: 1.	19q13.1	164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716
HTPFW87	1057170	858	2 - 2206	3033	Ala-65 to Gly-77, Leu-79 to Lys-85, Gln-95 to Asp-103, Gln-113 to Ser-119, Ser-230 to Gly-235, Lys-358 to Phe-368, Gln-397 to Thr-407, Pro-474 to Val-484, Asn-494 to Asp-505, Glu-513 to Gly-521, Ser-532 to Arg-539, Thr-557 to Thr-562, Pro-566 to Glu-571, Pro-577 to Glu-582.	H0622: 42, S0380: 10, S0368: 3, H0040: 1, H0519: 1 and S0378: 1.		
HISAF60	1057212	859	2 - 988	3034	Arg-8 to Pro-18, Asp-76 to Arg-83, Glu-85 to Thr-94, Arg-139 to Ile-145,	AR039: 13, AR033: 12, AR104: 11, AR053: 10, AR055: 9, AR052: 9, AR089: 9, AR096:		

				Gln-180 to Asp-196, Thr-201 to Ser-213, Lys-230 to Gln-235, Asn-293 to Gly-309, Thr-315 to Phe-321.	8, AR060: 5, AR061: 3 L0731: 12, L0747: 9, H0651: 5, L0759: 5, H0644: 4, H0013: 3, L0748: 3, L0439: 3, L0779: 3, H0575: 2, H0052: 2, H0327: 2, H0050: 2, H0083: 2, L0769: 2, L0662: 2, L0438: 2, H0539: 2, L0743: 2, L0750: 2, L0588: 2, H0716: 1, L0002: 1, L0443: 1, S0001: 1, S0360: 1, H0645: 1, H0411: 1, H0587: 1, H0333: 1, H0486: 1, S0010: 1, S0050: 1, H0051: 1, H0428: 1, H0553: 1, H0032: 1, L0455: 1, S0036: 1, H0038: 1, H0412: 1, H0413: 1, H0100: 1, T0042: 1, L0770: 1, L0637: 1, L0766: 1, L0649: 1, L0774: 1, L0776: 1, L0655: 1, L0659: 1, L0783: 1, L0529: 1, L5623: 1, L0790: 1,	

						L0791: 1, H0520: 1, H0519: 1, H0593: 1, H0689: 1, H0670: 1, H0672: 1, H0696: 1, S3014: 1, L0741: 1, L0744: 1, L0757: 1, L0608: 1 and S0398: 1.			
HRABO80	1057219	860	1521 - 1937	3035	Ala-1 to Ser-7, Gln-108 to Ser-117.	L0743: 4, L0751: 4, H0252: 3, L0659: 3, H0586: 2, H0135: 2, H0038: 2, L0438: 2, H0670: 2, L0779: 2, H0624: 1, S0430: 1, S0222: 1, H0052: 1, L0471: 1, T0010: 1, H0428: 1, H0616: 1, T0067: 1, L0564: 1, H0646: 1, L0662: 1, L0774: 1, L0783: 1, H0144: 1, S0126: 1, H0660: 1, H0651: 1, H0555: 1, L0749: 1, L0750: 1, L0752: 1, L0758: 1 and S0194: 1.			
HADDF30	1057260	861	1 - 1155	3036	Arg-49 to Leu-55, Arg-61 to Cys-69, Arg-87 to Arg-102, Asn-119 to Lys-125, Cys-132 to Met-151, Ser-157 to Glu-164,	L0777: 3, L0803: 2, L0774: 2, L0602: 2, L0596: 2, L0588: 2, S0376: 1, H0431: 1, H0427: 1, H0266: 1, H0328: 1, H0615: 1,	3q24-q28	106165, 117700, 117700, 165500, 169600, 180380,	

				Asn-187 to Glu-210, Glu-235 to Thr-243, Lys-245 to Val-251, His-256 to Ser-268, Ser-277 to Ser-288, Leu-303 to Glu-317, Glu-328 to Gln-341, Ser-350 to Leu-355, Ser-357 to Asn-364.	L0523: 1, L0659: 1, L0809: 1, L0666: 1, H0660: 1, S0378: 1 and L0750: 1.		180380, 180380, 276902, 600700, 601199, 601199, 601199, 601682
HDAAS58	1057272	862	245 - 460	3037	Asn-37 to Arg-45.	AR096: 4, AR089: 2, AR033: 2, AR060: 1, AR053: 1, AR055: 1, AR061: 1, AR104: 1, AR039: 0, AR052: 0 H0052: 4, L0768: 3, L0766: 3, L0438: 3, L0748: 3, L0750: 3, H0657: 2, H0341: 2, H0484: 2, T0042: 2, L0665: 2, H0658: 2, L0743: 2, L0744: 2, L0756: 2, L0777: 2, H0556: 1, H0656: 1, S0420: 1, H0393: 1, L0717: 1, S0222: 1, H0497: 1, H0486: 1, H0013: 1, H0263: 1, N0006: 1, L0579: 1, H0620: 1, L0163: 1, H0594: 1, H0267: 1,		

					H0615: 1, H0688: 1, H0494: 1, H0538: 1, L0769: 1, L0772: 1, L0643: 1, L0794: 1, L0649: 1, L0804: 1, L0774: 1, L0375: 1, L0776: 1, L0789: 1, L0792: 1, L0666: 1, H0144: 1, H0520: 1, H0711: 1, H0690: 1, L0439: 1, L0754: 1, L0745: 1, L0747: 1, L0786: 1, L0780: 1, L0752: 1, H0542: 1 and H0352: 1.		
HSDZG15	1057307	863	3 - 737	3038	Thr-92 to Gln-106, Val-222 to Val-227, Glu-229 to Asp-245.	H0556: 1, H0455: 1 and H0660: 1.	
HPDVY52	1057393	864	3 - 1391	3039		H0550: 3, L0751: 3, S0356: 2, H0024: 2, H0014: 2, H0059: 2, H0689: 2, H0690: 2, H0661: 1, H0645: 1, H0549: 1, H0052: 1, H0172: 1, H0123: 1, H0081: 1, H0266: 1, H0288: 1, H0553: 1, H0135: 1, H0494: 1, H0646: 1, L0649: 1, H0593: 1, H0682: 1,	20q13.2-q13.3	118504, 118504, 131242, 139320, 139320, 139320, 139320, 602025, 602235

						H0658: 1, H0672: 1, H0555: 1, L0439: 1, L0747: 1, S0276: 1 and H0506: 1.		
HHESW02	1057478	865	2 - 1252	3040	Arg-20 to Gly-28, Glu-41 to Asn-55, Asp-62 to Thr-74, Glu-105 to Thr-118, Ala-144 to Ser-158, Gln-200 to Glu-205, Cys-212 to Gly-217, Pro-231 to Phe-238, Gln-259 to Glu-264, Glu-282 to Tyr-288, Lys-300 to Asn-305, His-351 to Thr-358, Arg-399 to Cys-407.	H0556: 7, H0543: 7, H0265: 3, S0278: 3, S0002: 3, H0445: 3, H0657: 2, H0663: 2, H0580: 2, S0003: 2, H0090: 2, S0144: 2, S0152: 2, S0206: 2, H0542: 2, H0656: 1, H0125: 1, H0351: 1, H0575: 1, S0182: 1, H0023: 1, H0373: 1, H0375: 1, H0591: 1, H0040: 1, H0264: 1, T0041: 1, T0042: 1, S0142: 1, H0521: 1, H0214: 1, H0436: 1, L0750: 1, L0757: 1, S0242: 1, H0423: 1 and H0422: 1.		
HVVBW84	1057561	866	327 - 1625	3041	Cys-24 to Gly-35, Ala-42 to Glu-47, Gln-181 to Asp-188, Val-264 to Pro-270, Asn-289 to Gly-294, Leu-325 to Tyr-330, Gly-353 to Leu-360,	L0751: 19, L0659: 9, H0550: 8, H0545: 6, S0360: 5, H0620: 5, H0309: 4, H0050: 4, H0135: 4, L0754: 4, L0747: 4, L0731: 4, H0170: 3, H0253: 3,		

	Asn-379 to Asp-388.				H0024: 3, H0687: 3, H0124: 3, L0375: 3, H0144: 3, H0672: 3, S0196: 3, H0619: 2, H0586: 2, H0427: 2, H0546: 2, H0622: 2, H0628: 2, H0087: 2, H0100: 2, L0764: 2, L0519: 2, L0664: 2, S0028: 2, L0439: 2, L0758: 2, L0759: 2, H0343: 2, S0192: 2, S0212: 1, H0663: 1, H0662: 1, S0356: 1, H0208: 1, S0300: 1, H0549: 1, S0222: 1, H0392: 1, H0592: 1, H0618: 1, H0196: 1, H0052: 1, H0251: 1, H0232: 1, H0544: 1, H0041: 1, H0188: 1, S0250: 1, L0053: 1, H0031: 1, H0553: 1, H0644: 1, H0674: 1, H0163: 1, H0090: 1, H0477: 1, L0770: 1, L0644: 1, L0648: 1, L0662: 1, L0806: 1, L0776: 1, L0542: 1, L0546: 1, L0783: 1,	

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HEAAC39	1057603	867	1365 - 1511	3042	Arg-12 to Gln-25, Gly-31 to Gly-38.	AR039: 5, AR053: 5, AR089: 4, AR060: 3, AR061: 3, AR055: 2, AR096: 1, AR033: 1, AR104: 0 L0747: 4, L0777: 3, L0657: 2, L0759: 2, L0811: 1, H0369: 1, L0021: 1, S0346: 1, H0009: 1, L0637: 1, L0772: 1, L0375: 1, L0783: 1, L0809: 1, H0659: 1, H0660: 1, L0731: 1 and L0758: 1.		
HSLJC80	1057797	868	143 - 1945	3043	His-12 to Ala-26, Ser-70 to Glu-78, Pro-87 to Pro-94.	AR055: 5, AR060: 5, AR061: 5, AR052: 4, AR033: 4, AR089: 3, AR053: 3, AR096: 2, AR039: 2, AR104: 1 H0550: 9, H0651: 6, S0358: 5, L0659: 5, H0549: 3, H0586: 3, L0662: 3, L0794: 3,		

L0777: 3, H0575: 2, L0649: 2, L0744: 2, L0756: 2, L0758: 2, H0739: 1, H0716: 1, H0662: 1, H0587: 1, H0706: 1, H0050: 1, H0018: 1, H0200: 1, H0188: 1, H0687: 1, H0644: 1, H0628: 1, H0163: 1, H0100: 1, L0770: 1, L0809: 1, L0788: 1, L0663: 1, H0696: 1, S0406: 1, S0390: 1 and L0749: 1.	AR052: 10, AR096: 6, AR053: 4, AR033: 4, AR089: 4, AR039: 4, AR060: 4, AR104: 3, AR055: 3, AR061: 2 L0659: 11, L0665: 11, L0666: 9, L0752: 9, L0731: 9, H0623: 7, L0663: 7, H0658: 7, L0743: 7, L0750: 7, L0662: 6, L0758: 6, L0759: 6, S0045: 5, S0046: 5, H0412: 5, L0776: 5, L0655: 5, L0779: 5, H0437: 4, H0457: 4, L0747: 4,					
	3044					
	332 - 934					
	869					
	1057842					
HEOAD12						

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HVVBT41	1057880	870	214 - 1272	3045	Leu-1 to Lys-7, Arg-27 to Glu-33, Ala-43 to Gly-66, Ser-78 to Ser-84, Gly-111 to Val-118,			

				Glu-140 to Lys-145, Lys-163 to Asp-168, Lys-189 to Phe-197, Arg-257 to Leu-264, Gln-285 to Asp-292, Gly-298 to Ala-308, Arg-314 to Glu-323, Gly-329 to Gly-338, Ser-343 to Leu-353.			
HAZAE42	1057915	871	3 - 659	3046	Pro-8 to Gly-18, Pro-57 to Ser-67, Lys-183 to Trp-191.	L0768: 7, L0750: 6, L0783: 5, H0687: 4, H0428: 4, L0770: 4, H0672: 4, H0031: 3, L0767: 3, L0776: 3, L0665: 3, H0539: 3, L0749: 3, L0755: 3, L0731: 3, L0759: 3, L0608: 3, H0333: 2, H0046: 2, H0009: 2, T0006: 2, H0644: 2, H0059: 2, L0386: 2, L0805: 2, L0809: 2, H0547: 2, L0742: 2, L0747: 2, L0779: 2, L0752: 2, H0624: 1, H0686: 1, H0656: 1, L0778: 1, H0662: 1, H0393: 1, H0369: 1, H0550: 1, H0441: 1, H0574: 1, H0632: 1,		

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HPRBN60	1057948	872	3 - 1019	3047	Phe-1 to Cys-8, Ala-10 to Gly-23, Gln-114 to Lys-120, Glu-129 to Phe-135, Ile-155 to Gln-160, Ser-193 to Thr-199, Asp-214 to Gly-226, Asp-236 to Gly-245, Ala-283 to Arg-288, Ala-322 to Asp-331.	L0439: 9, H0550: 6, S0366: 6, S0364: 4, H0644: 3, S0358: 2, H0549: 2, H0645: 1, S0222: 1, H0370: 1, H0050: 1, L0471: 1, S0362: 1, H0039: 1, H0032: 1, H0212: 1, H0379: 1, L0438: 1 and S0044: 1.	4q35		
HOVCZ68	1057958	873	1 - 987	3048	Arg-20 to Arg-26,	H0574: 5, S0126: 4,			

				Ser-47 to Thr-59, Val-83 to Cys-91, Asn-94 to Arg-100, Asp-120 to Asn-126, Cys-135 to Glu-140, Gln-146 to Cys-153, Pro-184 to Gln-189, Lys-246 to Cys-252, Cys-259 to Asp-265, Ile-304 to Tyr-319.	L0748: 4, L0777: 4, L0759: 4, T0039: 3, H0428: 3, H0644: 3, S0194: 3, H0393: 2, H0331: 2, H0632: 2, L0021: 2, L0632: 2, L0805: 2, L0776: 2, H0436: 2, L0779: 2, H0171: 1, H0685: 1, H0661: 1, S0132: 1, H0333: 1, H0013: 1, H0546: 1, H0011: 1, H0024: 1, S0250: 1, H0038: 1, H0551: 1, T0067: 1, H0494: 1, S0210: 1, L0761: 1, L0794: 1, L0517: 1, L0790: 1, L0791: 1, L0665: 1, H0144: 1, H0689: 1, S0152: 1, L0747: 1, H0653: 1, S0192: 1, S0276: 1 and S0196: 1.		
H6EDF71	1057979	874	2 - 1120	3049	Asp-17 to Gly-23, Lys-89 to Asp-94, Lys-129 to Asp-134, Leu-195 to Glu-204.	L0777: 6, L0666: 3, H0648: 3, H0672: 3, L0747: 3, H0685: 2, S0376: 2, H0553: 2, S0440: 2, H0529: 2, L0775: 2, L0788: 2, L0665: 2, S0152: 2,	3q13.1-q13.2	600467, 600882

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HCOOF60	1058001	875	1 - 855	3050	Gly-28 to Ser-36, Trp-38 to Pro-60, Pro-98 to Thr-104, Pro-113 to Tyr-118, Phe-133 to Gly-140, Pro-186 to Leu-192, Glu-239 to Gly-246, Pro-257 to Lys-269, Lys-273 to Lys-279.	L0499: 33, L0493: 25, L0514: 10, H0484: 8, H0620: 6, L0769: 6, S0418: 5, S0356: 5, L0766: 5, L0515: 5, L0747: 5, L0779: 5, H0543: 5, H0559: 4, H0618: 4, H0617: 4, H0087: 4, S0422: 4,	17		

		L0497: 4, L0509: 4, S0376: 3, H0546: 3, H0424: 3, H0551: 3, L0504: 3, H0686: 2, H0545: 2, H0571: 2, H0412: 2, L0507: 2, L0773: 2, L0512: 2, L0783: 2, S0126: 2, L0592: 2, H0136: 2, H0624: 1, H0170: 1, H0171: 1, H0556: 1, S0342: 1, H0341: 1, H0483: 1, H0663: 1, H0305: 1, H0638: 1, S0420: 1, S0444: 1, S0408: 1, H0438: 1, H0333: 1, H0257: 1, T0039: 1, T0109: 1, H0013: 1, H0253: 1, H0251: 1, H0544: 1, H0083: 1, H0288: 1, H0622: 1, H0213: 1, H0068: 1, H0163: 1, H0634: 1, H0616: 1, H0100: 1, T0041: 1, H0641: 1, L0763: 1, L0638: 1, L0639: 1, L0646: 1, L0644: 1, L0648: 1, L0662: 1, L0768: 1, L5564: 1,			

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				Glu-20 to Leu-35, Asp-48 to Gly-54.	H0547: 14, H0519: 13, L0803: 12, L0754: 12, H0543: 12, L0794: 10, H0423: 10, H0521: 9, L0748: 9, H0013: 8, L0805: 8, H0046: 7, H0266: 7, S0022: 7, L0439: 7, L0758: 7, L0599: 7, L0471: 6, L0666: 6, L0663: 6, L0731: 6, H0553: 5, H0040: 5, S0422: 5, S0002: 5, H0529: 5, L0659: 5, H0435: 5, S0152: 5, L0750: 5, L0752: 5, L0596: 5,		
			3051				
			3522 - 1090				
			876				
		1058059					
	HVVBH81						

		L0591: 5, L0608: 5, H0170: 4, S0358: 4, S0360: 4, L0717: 4, S0222: 4, H0486: 4, H0318: 4, H0038: 4, H0494: 4, L0770: 4, L0761: 4, L0766: 4, L0804: 4, L0774: 4, L0809: 4, L0519: 4, S0406: 4, L0747: 4, H0445: 4, L0588: 4, H0717: 3, H0657: 3, S0212: 3, H0661: 3, H0580: 3, H0592: 3, H0587: 3, H0083: 3, H0428: 3, H0674: 3, H0560: 3, L0598: 3, L0369: 3, L0769: 3, L0646: 3, L0649: 3, L0776: 3, L0527: 3, L0790: 3, L0665: 3, H0144: 3, H0520: 3, S0380: 3, L0602: 3, H0522: 3, S0028: 3, L0740: 3, L0749: 3, L0756: 3, H0136: 3, H0506: 3, H0624: 2, H0171: 2, S6024: 2, H0583: 2, H0381: 2, H0662: 2, S0418: 2,					

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HSPTJ51	1058172	877	3 - 1004	3052	Gly-6 to Gly-15, Pro-17 to Leu-22, Trp-25 to Leu-70, Asp-72 to Val-86, Asp-151 to Asn-170, Ala-183 to Gln-198, Pro-221 to Pro-227, Pro-236 to Gly-244, Pro-272 to Gly-281, Pro-304 to Asp-318.	H0683: 39, L0731: 9, S0422: 7, L0748: 7, L0747: 6, H0013: 5, L0794: 4, L0805: 4, L0754: 4, L0779: 4, L0759: 4, H0650: 3, H0318: 3, H0046: 3, L0662: 3, S0328: 3, L0439: 3, L0740: 3, L0749: 3, L0777: 3, L0758: 3, L0593: 3, H0170: 2, H0341: 2, H0662: 2, S0442: 2, S0046: 2, L0717: 2,	3p23-p21		

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HOPKC80	1058174	878	240 - 980	3053	Pro-1 to Ser-6, Pro-25 to Cys-31, Arg-142 to Lys-150, Pro-223 to Arg-232.	S0408: 20, L0751: 11, S0358: 8, S0442: 5, S0444: 5, L0775: 5, L0776: 5, S0440: 4, L0659: 4, L0666: 4, L0755: 4, L0596: 4, S0356: 3, S0376: 3, L0771: 3, L0768: 3, L0774: 3, L0743: 3, L0748: 3, H0550: 2, L0373: 2, L0372: 2, L0665: 2, S0374: 2, H0684: 2, H0648: 2,	17p13	

					H0672: 2, S0392: 2, L0750: 2, L0752: 2, L0599: 2, H0295: 1, S0360: 1, S0410: 1, S0132: 1, H0549: 1, H0574: 1, L0021: 1, H0590: 1, H0085: 1, H0204: 1, H0150: 1, H0039: 1, H0617: 1, H0130: 1, L0764: 1, L0773: 1, L0648: 1, L0653: 1, L0657: 1, L0783: 1, L0383: 1, L0519: 1, L0791: 1, L0792: 1, L0663: 1, H0435: 1, H0659: 1, H0670: 1, H0696: 1, S0404: 1, S0406: 1, L0777: 1, L0759: 1 and S0434: 1.		
HOCPT58	1058250	879	1 - 765	3054	Ala-3 to Val-8, Ser-97 to Leu-104, Asp-106 to Thr-113, Ala-124 to Ser-129, Pro-136 to Gly-152, Pro-156 to Leu-167, His-176 to His-182, Thr-188 to Ser-194, Pro-200 to Tyr-205, Arg-208 to Glu-214,	H0618: 10, L0809: 7, H0713: 3, H0619: 3, H0052: 3, S0126: 3, L0748: 3, L0754: 3, L0745: 3, L0750: 3, H0716: 2, H0550: 2, H0392: 2, H0253: 2, H0687: 2, H0040: 2, H0551: 2, H0264: 2, L0800: 2, L0764: 2,		

					Arg-239 to Gly-245.	L0774: 2, H0660: 2, S0378: 2, S3014: 2, L0751: 2, L0749: 2, L0779: 2, L0758: 2, L0759: 2, H0295: 1, H0583: 1, S0212: 1, H0484: 1, H0255: 1, S0442: 1, S0358: 1, S0444: 1, S0360: 1, H0549: 1, H0333: 1, L0622: 1, H0486: 1, T0060: 1, H0427: 1, L0021: 1, H0194: 1, H0309: 1, H0546: 1, H0050: 1, L0471: 1, H0051: 1, S0388: 1, H0399: 1, H0375: 1, H0252: 1, H0428: 1, H0039: 1, H0553: 1, H0163: 1, H0616: 1, H0087: 1, H0494: 1, H0714: 1, S0438: 1, S0440: 1, H0633: 1, H0646: 1, S0144: 1, S0002: 1, S0426: 1, L0639: 1, L5566: 1, L0772: 1, L0648: 1, L0386: 1, L0650: 1, L0653: 1, L0655: 1, L0657: 1, L0659: 1,		

HPCTP25	1058287	880	3 - 1553	3055	Ser-89 to Met-94, Val-331 to Lys-339, Leu-344 to Met-350, Glu-386 to Tyr-394, Phe-480 to Gly-493.	L0789: 1, L0793: 1, L0664: 1, H0144: 1, H0593: 1, H0682: 1, H0670: 1, H0651: 1, S0330: 1, S0152: 1, H0521: 1, S0037: 1, S0027: 1, S0206: 1, L0743: 1, L0740: 1, L0747: 1, L0756: 1, H0595: 1 and H0653: 1.	H0707: 17, L0777: 14, L0803: 7, L0748: 6, S0002: 5, L0789: 5, S0126: 5, L0747: 5, L0750: 5, H0046: 4, S0412: 4, H0574: 3, S0010: 3, L0770: 3, L0666: 3, H0354: 2, H0510: 2, H0266: 2, H0644: 2, H0673: 2, H0494: 2, S0344: 2, S0426: 2, L0766: 2, L0776: 2, L0809: 2, H0659: 2, S0328: 2, H0539: 2, S0027: 2, S0028: 2, L0439: 2, L0779: 2, L0752: 2, L0731: 2, L0581: 2, L0601: 2, H0170: 1, S0342: 1, H0713: 1,	1q22-q23	104770, 107300, 107670, 110700, 131210, 134638, 136132, 145001, 146740, 146740, 146740, 146740, 146790, 159440, 159440, 159440, 173610, 176310, 186780, 191030, 191315,

					H0717: 1, S0114: 1, H0583: 1, S0212: 1, S0282: 1, H0661: 1, S0420: 1, S0358: 1, S0444: 1, S0408: 1, H0722: 1, S0046: 1, S0476: 1, H0431: 1, H0592: 1, H0587: 1, S0414: 1, T0114: 1, S0280: 1, H0156: 1, L0021: 1, L0105: 1, H0052: 1, H0050: 1, H0024: 1, H0014: 1, S0051: 1, H0083: 1, S6028: 1, H0292: 1, S0003: 1, H0328: 1, H0428: 1, H0032: 1, H0598: 1, H0090: 1, H0591: 1, H0038: 1, H0634: 1, H0616: 1, S0038: 1, T0041: 1, T0042: 1, H0625: 1, H0561: 1, H0714: 1, S0438: 1, H0529: 1, L0769: 1, L0638: 1, L0667: 1, L0646: 1, L0764: 1, L0765: 1, L0662: 1, L0794: 1, L0649: 1, L0774: 1, L0805: 1, L0379: 1,		227400, 227400, 600923, 601412, 601652, 602491

					L0656: 1, L0518: 1, L0783: 1, L0647: 1, L0663: 1, L0664: 1, L0665: 1, H0144: 1, L0438: 1, H0520: 1, H0547: 1, H0593: 1, H0689: 1, S0330: 1, S0004: 1, S0044: 1, H0694: 1, S0406: 1, H0478: 1, S3014: 1, S0032: 1, UNKWN: 1, L0749: 1, L0758: 1, S0031: 1, S0260: 1, L0608: 1 and H0667: 1.		
HODKM52	1058305	881	13 - 999	3056	Arg-1 to Val-6.	H0059: 6, H0370: 5, L0646: 2, L0754: 2, H0664: 1, S0376: 1, H0156: 1, H0615: 1, H0688: 1, H0030: 1, H0494: 1, L0764: 1, L0662: 1, L0664: 1, H0682: 1 and H0666: 1.	8p22-p21.3	148370, 238600, 238600, 238600, 238600, 600143, 601385, 602629
HCONB89	1058316	882	1 - 1302	3057				

HSABJ44	1058413	883	11 - 925	3058	Gly-1 to Lys-10, Glu-29 to His-36, Gly-43 to Asn-63, Ala-74 to Leu-84, Leu-132 to Asn-142, Pro-189 to Pro-194, Asp-196 to Ser-209, Pro-252 to Gly-268, Thr-271 to Lys-278, Pro-292 to Gln-300.	L0777: 9, L0751: 8, H0046: 5, H0550: 4, L0665: 4, H0521: 4, L0750: 4, H0623: 3, H0435: 3, H0658: 3, S0436: 3, S0212: 2, H0580: 2, H0619: 2, T0039: 2, H0427: 2, H0266: 2, S0438: 2, L0772: 2, L0659: 2, L0666: 2, L0663: 2, S0374: 2, S0152: 2, H0696: 2, H0555: 2, L0749: 2, L0731: 2, L0758: 2, L0596: 2, L0599: 2, S0192: 2, H0685: 1, S0040: 1, H0717: 1, S0116: 1, H0483: 1, H0255: 1, H0661: 1, H0663: 1, S0442: 1, S0358: 1, S0360: 1, S0408: 1, H0728: 1, L0717: 1, H0586: 1, H0618: 1, H0318: 1, H0263: 1, H0544: 1, H0510: 1, H0290: 1, S0368: 1, H0424: 1, H0553: 1, H0606: 1, H0032: 1, H0316: 1, H0634: 1,	12p13	103950, 120580, 131440, 139130, 142680, 176260, 190450, 200990, 216950, 600228, 600414, 600618, 602096

					H0551: 1, H0268: 1, H0494: 1, H0646: 1, S0426: 1, H0529: 1, L0501: 1, L0769: 1, L0646: 1, L0764: 1, L0773: 1, L0662: 1, L0649: 1, L0803: 1, L0375: 1, L0784: 1, L0776: 1, L0807: 1, L0783: 1, L0790: 1, H0693: 1, H0670: 1, H0672: 1, H0539: 1, S0350: 1, H0522: 1, S3014: 1, S0032: 1, L0748: 1, L0754: 1, L0780: 1, L0752: 1, H0595: 1, H0665: 1 and S0242: 1.		
HBPND88	1058432	884	1 - 1128	3059	Ala-2 to Gly-8, Tyr-12 to Pro-26, Gly-102 to Asn-107, Ala-113 to Asp-122, Arg-130 to Val-135, Glu-142 to Lys-150, Asn-189 to Ala-195, Ala-221 to His-228, Gln-248 to Ser-260, Ser-272 to Gly-283, Leu-321 to Glu-329, Cys-336 to Gly-344,	L0748: 15, L0599: 15, L0731: 9, L0751: 7, L0750: 6, S0360: 5, L0659: 5, L0754: 5, L0755: 5, L0601: 5, H0295: 4, L0655: 4, L0663: 4, L0664: 4, H0670: 4, L0744: 4, L0747: 4, L0757: 4, T0049: 3, S0474: 3, H0124: 3, L0763: 3, L0662: 3, L0768: 3,	10q22-q27	126090, 129010, 142600, 250850, 601386, 601493

					Ala-358 to Gly-367.	L0806: 3, L0509: 3, L0776: 3, L0809: 3, L0666: 3, L0665: 3, S0328: 3, H0445: 3, L0596: 3, S0026: 3, L0600: 3, S0358: 2, S0376: 2, S0444: 2, H0083: 2, S0210: 2, L0761: 2, L0372: 2, L0764: 2, L0774: 2, L0654: 2, L0382: 2, H0435: 2, H0648: 2, L0759: 2, H0444: 2, L0608: 2, H0685: 1, L0785: 1, H0341: 1, S0212: 1, H0255: 1, H0661: 1, H0664: 1, H0662: 1, S0418: 1, S0420: 1, S0442: 1, S0408: 1, S0410: 1, H0393: 1, H0431: 1, H0392: 1, H0331: 1, L0622: 1, T0114: 1, T0109: 1, H0427: 1, L0021: 1, T0082: 1, H0530: 1, H0546: 1, H0545: 1, S0051: 1, H0030: 1, H0031: 1, H0032: 1, H0169: 1, H0674: 1, H0212: 1,		

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H6EEO05	1058438	885	67 - 1527	3060	Arg-29 to Ser-35, Ser-79 to Gly-91, Pro-105 to Arg-120, Thr-168 to Glu-175, Phe-187 to Ala-200, Arg-272 to Lys-282,	L0748: 11, L0747: 9, L0749: 7, L0439: 6, L0599: 5, L0779: 4, L0757: 4, L0758: 4, L0662: 3, L0766: 3, L0774: 3, L0659: 3,	

					Arg-325 to Asp-330, Arg-332 to Phe-338, Arg-358 to Lys-368, Cys-433 to Asn-441, Leu-456 to Asp-461.	L0751: 3, L0750: 3, S0358: 2, H0431: 2, H0622: 2, L0637: 2, L0375: 2, L0776: 2, L0666: 2, H0648: 2, H0672: 2, S3014: 2, L0741: 2, L0740: 2, L0731: 2, T0002: 1, S0040: 1, S6024: 1, S0116: 1, H0664: 1, S0418: 1, S0360: 1, S0046: 1, L0717: 1, S6016: 1, H0331: 1, H0632: 1, H0559: 1, H0486: 1, H0013: 1, S0010: 1, H0318: 1, S0049: 1, H0434: 1, L0041: 1, L0471: 1, S0362: 1, H0051: 1, S0388: 1, S6028: 1, H0266: 1, H0687: 1, H0615: 1, S0364: 1, H0551: 1, H0272: 1, S0038: 1, H0100: 1, L0351: 1, H0560: 1, S0438: 1, H0509: 1, H0652: 1, S0142: 1, S0344: 1, S0426: 1, L0769: 1, L0638: 1, L0667: 1, L0373: 1,		

						L0372: 1, L0764: 1, L0771: 1, L0648: 1, L0521: 1, L0363: 1, L0803: 1, L0650: 1, L0775: 1, L0788: 1, L0664: 1, H0660: 1, L0743: 1, L0753: 1, L0480: 1, L0595: 1 and S0460: 1.		153880, 601622, 601649
HFIVR61	1058451	886	157 - 777	3061	Pro-27 to Lys-32, Pro-37 to Ser-44, Glu-46 to Gln-51, Arg-63 to Asn-71, Gln-125 to Ala-135, Gln-150 to Asn-155.	AR096: 10, AR089: 8, AR039: 7, AR061: 7, AR053: 6, AR052: 5, AR033: 5, AR060: 3, AR104: 3, AR055: 3 S0242: 271, S0196: 77, H0551: 32, S0003: 13, H0634: 11, H0635: 10, H0250: 7, H0069: 7, L0757: 6, H0486: 5, H0623: 5, H0386: 4, S0418: 2, H0411: 2, S0214: 2, H0628: 2, L0649: 2, L0803: 2, L0789: 2, H0265: 1, H0556: 1, H0140: 1, S0040: 1, S0298: 1, H0638: 1, S0376: 1, H0637: 1, S0046: 1, H0431: 1, H0461: 1, L0021: 1, H0318: 1,	7p21	

				H0123: 1, H0200: 1, H0109: 1, H0615: 1, H0111: 1, S0015: 1, L0800: 1, L0644: 1, L0766: 1, L0804: 1, L0633: 1, S0126: 1 and L0780: 1.	21q22.1-q22.2	147450, 176261, 253270, 601399
HVVBX28	1058458	887	2 - 493	3062	L0748: 13, L0731: 13, L0749: 7, L0744: 6, L0438: 5, L0740: 5, L0768: 3, L0747: 3, L0758: 3, S0360: 2, L0717: 2, S0022: 2, L0638: 2, H0547: 2, L0743: 2, L0439: 2, L0754: 2, L0604: 2, H0656: 1, H0013: 1, H0427: 1, H0098: 1, S0010: 1, H0014: 1, H0687: 1, H0163: 1, H0561: 1, H0509: 1, H0652: 1, H0538: 1, L0598: 1, L0770: 1, L0769: 1, L0637: 1, L0771: 1, L0363: 1, L0381: 1, L0375: 1, L0806: 1, L0659: 1, L0789: 1, L0665: 1, H0144: 1, H0670: 1, H0672: 1, S0146: 1,		

						H0555: 1, L0750: 1, L0756: 1, L0777: 1, L0753: 1, L0755: 1, L0757: 1, L0759: 1, L0597: 1 and S0276: 1.		
HVVBI38	1058475	888	258 - 2291	3063	Pro-27 to Lys-35.			
HUKEJ46	1058539	889	242 - 1165	3064		AR089: 2, AR096: 2, AR060: 1, AR053: 1, AR061: 1, AR033: 0, AR055: 0, AR104: 0, AR039: 0 S0358: 5, H0596: 2, H0059: 2, S0354: 1, H0263: 1, L0738: 1, L0639: 1, L0764: 1, L0767: 1, L0768: 1, L0659: 1, S0374: 1, H0660: 1, H0672: 1, S0380: 1 and L0731: 1.		
HDTFT47	1058588	890	2 - 274	3065	Trp-1 to Glu-9, Thr-29 to Val-35, Arg-73 to Thr-79.	L0655: 10, L0664: 9, L0751: 8, H0521: 7, S0360: 5, H0486: 5, L0777: 4, H0657: 3, H0638: 3, H0087: 3, L0763: 3, L0743: 3, L0748: 3, L0599: 3, H0662: 2, H0637: 2, H0581: 2, H0090: 2, L0768: 2, L0651: 2, L0653: 2, L0659: 2,	6p21.3		106300, 108800, 120290, 120290, 120810, 120820, 142857, 142858, 150270, 167250, 170261,

						177900, 179450, 201910, 217000, 222100, 233100, 235200, 248611, 256550, 256550, 600202, 600261, 601868, 602280, 602475
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HSSFS71	1058596	891	2 - 499	3066	Glu-42 to Leu-48, His-56 to Cys-62, Ala-107 to Pro-119.	H0555: 1, L0741: 1, L0744: 1, L0731: 1, H0595: 1 and H0543: 1.	AR055: 18, AR033: 9, AR096: 5, AR104: 5, AR089: 4, AR060: 4, AR052: 2, AR039: 2, AR061: 2, AR053: 1 H0617: 22, H0424: 13, L0439: 12, H0618: 9, H0658: 9, L0751: 9, H0265: 8, L0666: 7, S0126: 7, S0046: 6, S0222: 6, H0031: 6, L0803: 6, L0731: 6, H0009: 5, L0769: 5, L0758: 5, S0420: 4, H0370: 4, L0163: 4, H0553: 4, H0135: 4, L0805: 4, L0657: 4, L0809: 4, L0779: 4, H0483: 3, H0150: 3, H0266: 3, L0663: 3, H0670: 3, L0755: 3, H0717: 2, L0415: 2, H0661: 2, S0444: 2, S0045: 2, H0549: 2, H0486: 2, H0156: 2, H0599: 2, S0049: 2, H0373: 2, T0010: 2,	14q32.3	

		H0622: 2, L0142: 2, H0181: 2, H0412: 2, H0623: 2, L0351: 2, L0640: 2, L0800: 2, L0648: 2, L0662: 2, L0794: 2, L0789: 2, L0664: 2, L0665: 2, L0438: 2, H0689: 2, H0555: 2, S3014: 2, L0741: 2, L0743: 2, L0754: 2, L0747: 2, H0170: 1, H0685: 1, S0040: 1, H0713: 1, H0716: 1, S6024: 1, H0656: 1, S0212: 1, H0484: 1, S0418: 1, S0358: 1, S0468: 1, S0132: 1, S0476: 1, L0717: 1, L0394: 1, H0550: 1, H0441: 1, H0431: 1, H0592: 1, H0587: 1, H0427: 1, L0021: 1, H0706: 1, H0004: 1, H0253: 1, T0048: 1, H0318: 1, H0581: 1, N0011: 1, H0196: 1, H0041: 1, H0563: 1, H0566: 1, H0050: 1, L0471: 1, H0024: 1, H0014: 1,		

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HSDJH63	1058612	892	153 - 1358	3067	Thr-17 to Lys-23, Lys-93 to Arg-98.	AR039: 28, AR053: 20, AR055: 19, AR033: 17, AR052: 16, AR089: 15, AR104: 12, AR061: 12, AR096: 11, AR060: 11 H0615: 2, L0766: 2, S0114: 1, H0650: 1,		

						H0657: 1, L0791: 1, H0689: 1, S0152: 1, S0260: 1 and H0445: 1.		
HAHGD24	1058622	893	2 - 1027	3068	Pro-17 to Arg-25, Ala-61 to Trp-72, Gln-96 to Pro-111, Gln-210 to Pro-215.	L0666: 3, L0657: 2, H0689: 2, H0555: 2, L0751: 2, S0001: 1, S0360: 1, H0675: 1, S0132: 1, H0549: 1, S0222: 1, H0333: 1, T0114: 1, H0599: 1, L0022: 1, H0594: 1, H0688: 1, S0364: 1, H0100: 1, H0561: 1, S0382: 1, L0637: 1, L0761: 1, L0649: 1, L0788: 1, L0789: 1, L0665: 1, H0547: 1, H0690: 1, H0658: 1, H0660: 1, H0672: 1, H0539: 1, H0696: 1, L0743: 1, L0754: 1 and L0780: 1.		
HTAEV85	1058723	894	426 - 238	3069		H0052: 20, H0264: 5, H0194: 4, T0010: 4, H0435: 4, H0436: 4, H0543: 4, S0222: 3, L0439: 3, H0069: 2, H0618: 2, H0581: 2, H0012: 2, H0617: 2, H0087: 2, S0038: 2,		

					L0438: 2, H0689: 2, L0741: 2, H0423: 2, H0422: 2, H0265: 1, S0001: 1, S0282: 1, H0619: 1, H0250: 1, H0635: 1, H0156: 1, S0049: 1, H0597: 1, H0327: 1, S0388: 1, S0051: 1, H0271: 1, S0036: 1, H0135: 1, H0063: 1, H0116: 1, H0652: 1, L0652: 1, L0517: 1, H0539: 1, H0518: 1, L0758: 1, H0445: 1, L0592: 1 and L0366: 1.			
HPMME44	1058928	895	9 - 338	3070	H0265: 1, H0050: 1, H0644: 1, S0150: 1, H0521: 1, H0542: 1 and S0424: 1.			
HEEAZ17	1058949	896	2184 - 2426	3071	L0758: 7, L0666: 5, L0749: 4, L0779: 4, H0620: 3, L0540: 3, L0439: 3, L0750: 3, L0731: 3, L0759: 3, S0360: 2, L0763: 2, L0770: 2, L0803: 2, L0775: 2, L0805: 2, L0776: 2, L0665: 2, L0743: 2, L0747: 2,			

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HSPSG28	1058977	897	474 - 1679	3072	Asp-33 to Arg-39, Ala-43 to Leu-48, Glu-256 to Gln-266, Gly-305 to Ile-311, Pro-314 to Ala-320, Gln-388 to Asn-394.	H0657: 6, H0484: 6, S0046: 5, H0486: 5, L0666: 5, L0750: 5, H0543: 5, S0360: 4, S0010: 4, H0617: 4, S0036: 4, H0038: 4, H0056: 4, L0766: 4, H0656: 3, H0292: 3, L0455: 3, H0135: 3, L0769: 3, H0547: 3, H0659: 3, L0439: 3,	17q23-q25	114290, 138033, 138700, 139250, 150200, 154275, 162100, 170500, 170500, 170500,

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HTGFW12	1059006	898	2 - 1450	3073	Gly-1 to Leu-6.	AR060: 23, AR104: 21, AR089: 11, AR061: 8, AR096: 7, AR055: 6 L0803: 10, L0451: 8, S0250: 6, L0804: 6, L0731: 5, S0212: 4, H0431: 4, H0547: 4, L0439: 4, L0777: 4, S0360: 3, L0776: 3, L0592: 3, H0717: 2, S0116: 2, S0046: 2, H0004: 2, H0046: 2, L0471: 2, H0553: 2, H0090: 2, H0063: 2, L0638: 2, L0662: 2, L0774: 2, L0775: 2,		

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HOFMT75	1059050	899	1 - 465	3074	Ala-18 to Gly-23.	AR039: 2, AR089: 1, AR060: 1, AR033: 1, AR096: 0, AR061: 0, AR053: 0, AR055: 0, AR104: 0 H0415: 1 and L0751: 1.	11p15.5	

								194071, 204500, 600856, 601680, 602631, 602631
HARNB17	1059085	900	241 - 501	3075	Arg-1 to Gly-6.	AR089: 7, AR053: 7, AR060: 5, AR039: 5, AR096: 5, AR104: 5, AR033: 5, AR055: 4, AR061: 2 L0439: 7, L0803: 6, L0599: 3, S0360: 2, L0794: 2, H0659: 2, L0747: 2, H0423: 2, H0662: 1, L0717: 1, H0351: 1, H0592: 1, H0085: 1, H0674: 1, H0551: 1, S0422: 1, L0761: 1, L0372: 1, L0767: 1, L0653: 1, L0776: 1, L0659: 1, H0144: 1, H0651: 1, H0436: 1, S0432: 1, L0740: 1, L0754: 1, L0779: 1, L0780: 1, L0731: 1, S0436: 1 and S0026: 1.		
HPDRG65	1059102	901	437 - 285	3076			H0658: 2	
HAOSG15	1059145	902	1 - 1776	3077			L0754: 23, L0747: 19, 2	

H0584: 18, L0731: 17, S0372: 16, L0766: 14, L0740: 12, L0749: 12, L0752: 12, S0358: 11, L0750: 11, S0360: 9, H0013: 9, S0003: 9, H0341: 8, S0420: 8, H0038: 8, H0144: 8, L0593: 8, H0040: 7, L0665: 7, L0755: 7, L0757: 7, L0591: 7, L0608: 7, L0438: 6, L0439: 6, L0759: 6, S0026: 6, S0424: 6, H0052: 5, L0748: 5, L0751: 5, L0777: 5, L0758: 5, L0362: 5, H0543: 5, H0556: 4, H0663: 4, H0333: 4, H0545: 4, H0266: 4, H0591: 4, L0771: 4, L0774: 4, L0776: 4, L0666: 4, H0521: 4, L0745: 4, L0588: 4, L0594: 4, H0140: 3, H0686: 3, S0007: 3, S0045: 3, H0411: 3, S0222: 3, H0431: 3, H0575: 3, L0471: 3, T0003: 3, S6028: 3,						

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HHEND31	1059180	903	76 - 1827	3078	Asn-1 to Gln-6, Thr-71 to Ala-77, Cys-114 to Ser-126, Pro-147 to Tyr-156, Gly-176 to Gly-182.	AR089: 4, AR039: 3, AR033: 2, AR096: 2, AR104: 2, AR060: 2, AR053: 2, AR061: 1, AR055: 0 S0040: 1, S0114: 1, H0412: 1, S0386: 1, S0472: 1, L0649: 1, L0803: 1, S0053: 1, L0748: 1 and H0543: 1.		
HBMSN62	1059186	904	1000 - 1254	3079	Pro-6 to Lys-19.	L0754: 4, L0766: 3, L0803: 3, H0648: 3, L0758: 3, L0800: 2, L0775: 2, L0666: 2, L0747: 2, L0779: 2, S0116: 1, S0358: 1, H0574: 1, L0021: 1, L0022: 1, S0003: 1, H0615: 1, L0351: 1,		

						L0667: 1, L0764: 1, L0768: 1, L0806: 1, L0379: 1, L0659: 1, L0647: 1, L0791: 1, L0792: 1, L0663: 1, L0664: 1, L0665: 1, S0330: 1, L0748: 1, L0439: 1, L0777: 1 and L0599: 1.		
HOVCJ46	1059241	905	2 - 358	3080	Ser-38 to Gly-43, Gln-80 to Ile-93, Leu-104 to Arg-109.	L0769: 6, L0757: 5, L0777: 3, L0731: 3, H0428: 2, L0809: 2, S0404: 2, L0748: 2, L0758: 2, H0575: 1, H0251: 1, H0085: 1, H0644: 1, H0646: 1, L0773: 1, L0662: 1, L0768: 1, L0775: 1, L0782: 1, L0783: 1, L0384: 1, S0126: 1, L0747: 1, L0749: 1 and L0779: 1.		
HWLEP14	1059394	906	32 - 1348	3081	Pro-11 to Arg-21, Gly-34 to Ser-41, Pro-65 to Asn-72, Ser-80 to Gln-85, Phe-124 to Cys-129.	AR089: 2, AR053: 2, AR061: 2, AR039: 2, AR060: 2, AR096: 1, AR033: 1, AR055: 1, AR104: 1, AR052: 0 L0664: 3, S0354: 2, H0617: 2, L0509: 2, H0670: 2, L0601: 2,		

							H0170: 1, H0510: 1, H0622: 1, H0604: 1, L0662: 1, H0689: 1 and H0683: 1.		
HTFNO73	1059415	907	802 - 491	3082	Gly-1 to Asn-7, Lys-12 to Glu-20, Asn-34 to Gly-41, Val-79 to Asn-88.	AR096: 2, AR089: 1, AR055: 1, AR033: 0, AR060: 0, AR061: 0, AR052: 0, AR104: 0, AR053: 0 H0666: 15, H0622: 5, L0809: 3, L0731: 2, H0586: 1, H0032: 1, H0488: 1, L3905: 1, L0766: 1, L0803: 1, L0804: 1, L0656: 1, L0659: 1, H0648: 1, L0779: 1, L0777: 1, L0758: 1, L0759: 1, H0707: 1, S0424: 1 and H0506: 1.			
HDABR73	1059532	908	382 - 1191	3083	Ser-1 to Trp-7, Asp-47 to Ile-52, Pro-70 to Ser-80, Cys-89 to Thr-98, Ala-131 to Ser-142, Phe-169 to Cys-176, Gly-183 to Ser-193, Phe-202 to Pro-209, Arg-243 to Ala-249, Ser-256 to Lys-265.	H0494: 21, H0529: 16, L0755: 16, S0358: 15, H0435: 13, L0665: 11, L0747: 11, L0752: 11, H0521: 10, L0649: 9, S0360: 8, L0662: 8, L0659: 8, L0601: 8, S0354: 7, L0754: 7, H0663: 6, S0376: 6, S0444: 6, H0592: 6,	19q13.1	164731, 172400, 172400, 180901, 180901, 221770, 248600, 600918, 602716	

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HOGAJ24	1059626	909	169 - 1698	3084	Gln-37 to Arg-58, Arg-75 to Met-87, Lys-113 to Asn-123,	H0435: 20, L0751: 20, H0436: 6, L0665: 5, H0052: 4, S0036: 4,			

				Arg-148 to Tyr-155, Ser-158 to Gly-165, Ala-168 to Lys-178, His-215 to Ile-221, Ser-236 to Tyr-241, Ala-278 to Gly-287, Gly-294 to Asp-299, Glu-306 to Ser-313, Ser-374 to Arg-382, Ala-411 to Pro-416, Cys-423 to Arg-430, Thr-452 to Cys-462, Glu-479 to Glu-499, Gly-501 to Gly-507.	L0438: 4, H0264: 3, H0265: 2, H0261: 2, S0222: 2, T0010: 2, L0770: 2, L0764: 2, L0648: 2, H0547: 2, H0682: 2, H0672: 2, L0748: 2, L0756: 2, S0031: 2, H0423: 2, H0556: 1, H0295: 1, S0134: 1, S0282: 1, H0255: 1, H0661: 1, H0663: 1, S0356: 1, S0360: 1, H0619: 1, L0717: 1, S6014: 1, H0415: 1, H0643: 1, H0486: 1, H0156: 1, H0618: 1, S0010: 1, H0581: 1, S0049: 1, H0457: 1, H0050: 1, H0012: 1, H0320: 1, H0354: 1, H0271: 1, L0140: 1, H0063: 1, H0272: 1, H0494: 1, H0646: 1, L0761: 1, L0644: 1, L0771: 1, L0774: 1, L0788: 1, H0698: 1, H0593: 1, H0658: 1, H0648: 1, S0328: 1, S0330: 1, H0518: 1, L0744: 1,

							L0439: 1, L0749: 1, L0758: 1, L0759: 1 and S0260: 1.		
HTJMV05	1059692	910	2 - 685	3085			H0083: 17, H0556: 14, H0265: 7, L0794: 6, H0271: 5, H0543: 5, L0766: 4, L0809: 4, H0436: 3, H0635: 2, H0150: 2, S0114: 1, H0650: 1, H0645: 1, S0222: 1, H0438: 1, H0594: 1, H0416: 1, H0615: 1, H0033: 1, H0087: 1, H0488: 1, S0440: 1, S0142: 1, L0764: 1, L0803: 1, L0655: 1, L0657: 1, L0656: 1, L0659: 1, L0783: 1, L0790: 1, L0663: 1, L0665: 1, S0216: 1, H0670: 1, L0758: 1, H0595: 1, H0542: 1, H0423: 1 and H0422: 1.		
HOOIL70	1059710	911	134 - 1996	3086	Pro-19 to Ala-24, Pro-57 to Asp-64, Pro-125 to His-138, Ser-177 to Ala-182, Asn-257 to Ala-266, Glu-275 to Asn-284,		L0749: 6, L0761: 4, H0657: 3, S0142: 3, L0766: 3, L0655: 3, L0777: 3, L0599: 3, H0556: 2, S0358: 2, H0457: 2, L0769: 2,	12p13	103950, 120580, 131440, 139130, 142680, 176260,

				Arg-288 to Lys-303, Pro-340 to Lys-345, Arg-378 to Cys-387, His-411 to Arg-419, Ile-462 to Ser-468, Gln-553 to Ile-565, Lys-577 to Val-589, His-594 to Lys-621.	L0794: 2, L0499: 2, L0653: 2, L0776: 2, L0659: 2, H0648: 2, H0521: 2, H0555: 2, L0747: 2, L0750: 2, H0445: 2, H0650: 1, H0656: 1, H0255: 1, S0356: 1, S0140: 1, L0717: 1, S0278: 1, S0280: 1, H0274: 1, H0050: 1, H0015: 1, H0083: 1, H0688: 1, H0606: 1, H0124: 1, T0067: 1, S0002: 1, S0426: 1, L0763: 1, L0772: 1, L0771: 1, L0784: 1, L0629: 1, L0382: 1, L0663: 1, L0665: 1, H0689: 1, H0672: 1, H0522: 1, H0436: 1, L0780: 1, L0752: 1, L0731: 1 and H0422: 1.		190450, 200990, 216950, 600228, 600414, 600618, 602096
HUNAE87	1059743	912	146 - 955	3087	Asn-1 to Asp-6, Pro-16 to Gly-22, Tyr-28 to Glu-34, Thr-44 to Val-57, Arg-96 to Pro-106, Leu-118 to His-123, Pro-125 to Ser-146,	L0748: 19, L0754: 15, H0046: 13, L0751: 10, H0013: 8, S0152: 8, H0623: 7, H0644: 6, L0662: 6, L0666: 6, L0438: 6, L0740: 6, L0747: 6, S0358: 5,	11q11	106100

					Thr-151 to Gln-178, Glu-199 to Leu-210, Asp-217 to Tyr-237, Val-245 to Tyr-251.	S0476: 5, H0575: 5, H0622: 5, L0659: 5, L0758: 5, H0645: 4, S0440: 4, L0770: 4, L0806: 4, L0776: 4, L0439: 4, L0750: 4, L0755: 4, L0731: 4, S0442: 3, S0022: 3, H0032: 3, H0591: 3, L0769: 3, L0665: 3, H0144: 3, H0547: 3, H0539: 3, S0390: 3, S0028: 3, S0206: 3, L0759: 3, L0591: 3, H0624: 2, H0686: 2, S0212: 2, S0282: 2, H0662: 2, S0444: 2, H0637: 2, S0045: 2, H0619: 2, H0351: 2, H0586: 2, H0486: 2, H0042: 2, H0052: 2, N0006: 2, H0015: 2, H0039: 2, H0553: 2, H0135: 2, H0488: 2, H0646: 2, H0652: 2, L0369: 2, L0627: 2, L0764: 2, L0766: 2, L0774: 2, L0653: 2, L0565: 2, H0519: 2, H0593: 2, L0742: 2,		

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HTPHO01	1059764	913	2 - 1081	3088	Pro-81 to Lys-89, Cys-91 to Leu-100, Asp-103 to Ile-110, Pro-179 to Pro-184, Arg-194 to Met-199, Pro-203 to Arg-213, Pro-249 to Ala-262, Ser-274 to Glu-279, Asp-301 to Trp-309, Pro-335 to Ser-343.	H0008: 1. AR096: 5, AR055: 3, AR089: 3, AR061: 3, AR053: 2, AR033: 2, AR060: 2, AR039: 1, AR104: 1, AR052: 0 H0599: 25, L0731: 19, L0750: 14, L0754: 13, L0766: 8, L0776: 8, L0752: 8, L0757: 8, L0747: 6, L0744: 5, L0769: 4, L0779: 4, L0777: 4, S0420: 3, L0770: 3, L0755: 3, L0758: 3, L0471: 2, L0771: 2, L0775: 2, L0806: 2, L0659: 2, S0126: 2, H0670: 2, L0743: 2, L0759: 2, L0604: 2, H0624: 1, H0685: 1, H0650: 1, H0484: 1, H0483: 1, H0661: 1, S0358: 1, S0360: 1, S0046: 1, H0411: 1, H0632: 1, H0427: 1, S0280: 1, H0097: 1, H0004: 1, S0049: 1, H0024: 1, H0028: 1, H0622: 1, L0142: 1, H0708: 1,	3q13.3-q21	106165, 117700, 117700, 126451, 150210, 169600, 180380, 180380, 180380, 190000, 203500, 232050, 276902, 600882, 601199, 601199, 601199, 601471, 601682

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HDPWK69	1059784	914	206 - 496	3089		S0001: 1, H0125: 1, H0580: 1, H0581: 1, H0457: 1, H0428: 1, L0627: 1, H0521: 1 and L0749: 1.		
HPCOK03	1059849	915	8 - 1267	3090	Asp-19 to Ile-26, Lys-86 to Leu-96, Pro-108 to Leu-119, Ser-121 to Gln-144, Ser-243 to Ala-251, Pro-299 to Thr-305, Asn-349 to Ser-359, Leu-381 to Pro-389, Asn-403 to Ser-420.	L0748: 19, L0758: 6, L0794: 5, L0766: 5, L0749: 4, H0038: 3, H0494: 3, L0771: 3, H0520: 3, H0288: 2, H0551: 2, L0665: 2, L0438: 2, H0547: 2, H0659: 2, L0591: 2, L0595: 2, H0177: 1, S0418: 1, S0046: 1, H0393: 1, L0717: 1, H0370: 1, T0039: 1, T0114: 1, H0318: 1,	20q13.2-q13.3	118504, 118504, 131242, 139320, 139320, 139320, 139320, 602025, 602235

					T0110: 1, H0553: 1, H0412: 1, H0413: 1, H0623: 1, S0112: 1, T0042: 1, H0529: 1, L0369: 1, L0769: 1, L0646: 1, L0800: 1, L0805: 1, L0655: 1, L0657: 1, L0787: 1, L0789: 1, H0702: 1, H0684: 1, H0648: 1, S0152: 1, H0522: 1, H0626: 1, L0751: 1, L0747: 1, L0777: 1, L0608: 1, H0668: 1 and H0667: 1.			
HVVBP14	1059852	916	3 - 935	3091	Pro-26 to Ser-35, Lys-46 to Arg-63, Ile-71 to Asp-76, Lys-105 to Ile-115, Glu-119 to Tyr-125, His-136 to His-141, Leu-148 to Arg-154, Thr-165 to Glu-170, Asp-194 to Gly-201, Glu-216 to Pro-222, Ser-227 to Phe-232, Arg-236 to Glu-248, Glu-271 to Lys-282, Ala-297 to Leu-311.	L0754: 10, H0251: 9, L0591: 9, S0212: 8, S0003: 7, L0771: 7, S0192: 7, L0805: 6, H0616: 5, L0776: 5, H0689: 5, L0747: 5, L0777: 5, L0757: 5, L0759: 5, H0624: 4, S0420: 4, S0360: 4, L0471: 4, H0124: 4, H0551: 4, H0413: 4, L0769: 4, L0517: 4, S0126: 4, S3014: 4, L0756: 4, L0755: 4, L0731: 4, S0045: 3,	11p13		102772, 106210, 106210, 106210, 106210, 107271, 114550, 115500, 136530, 151390, 179615, 179615, 179616, 180385, 194070,

							194070, 194070, 245349
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HOOJC15	1059967	917	1077 - 298	3092	L0747: 4, L0764: 3, H0648: 3, H0624: 2, H0673: 2, L0665: 2, L0748: 2, L0758: 2, H0171: 1, H0556: 1, H0351: 1, L0021: 1, H0318: 1, H0545: 1, H0354: 1, H0616: 1, L0763: 1, L0769: 1, L0667: 1, L0773: 1, L0766: 1, L0804: 1, L0659: 1, L0666: 1,		

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HODFG47	1059969	918	182 - 1213	3093	Gln-1 to Leu-9, Thr-21 to Phe-26, Leu-49 to Arg-62, Thr-114 to Asp-120, Arg-132 to Ser-140, Gln-148 to Trp-155, Pro-192 to Asn-198, Lys-235 to Asp-241, Tyr-256 to Trp-266, Ile-273 to Glu-283, Ser-297 to Lys-304, Val-326 to Val-331.	S0003: 3, L0776: 2, S0040: 1, H0587: 1, S0010: 1, H0328: 1, H0615: 1, H0551: 1, T0042: 1, H0494: 1, L0657: 1, H0519: 1, S0328: 1, H0539: 1, L0758: 1, L0608: 1 and S0194: 1.		
HBIPC05	1060137	919	2 - 265	3094	Pro-19 to Glu-24, Ala-66 to Arg-71, Pro-81 to Tyr-88.	H0617: 2, H0618: 1, S0052: 1 and H0593: 1.			
HOPJJ32	1060193	920	447 - 635	3095	Lys-30 to Phe-36.	L0766: 1, H0684: 1 and H0542: 1.	7p22	600259, 600259	
HNOBN20	1060382	921	1380 - 1282	3096		H0615: 2, H0580: 1, H0024: 1, H0428: 1, L0804: 1, H0670: 1, H0651: 1 and L0756: 1.			
HOCPX74	1060391	922	3 - 1514	3097	Gly-18 to Glu-23.	H0650: 1, H0656: 1, H0618: 1, H0290: 1, H0551: 1, H0477: 1, S0450: 1, H0547: 1,			

							H0684: 1, H0660: 1, H0555: 1, L0741: 1, L0751: 1 and H0543: 1.		
HTEPP27	1060415	923	12 - 605	3098	Ala-67 to Tyr-72, Glu-75 to Asn-81, Glu-176 to Lys-187.	L0766: 7, L0803: 5, L0809: 5, L0779: 5, L0756: 4, S0380: 3, L0439: 3, L0759: 3, S0442: 2, H0031: 2, H0591: 2, H0616: 2, L0789: 2, L0438: 2, L0754: 2, L0755: 2, L0731: 2, L0758: 2, H0171: 1, H0657: 1, L2250: 1, H0024: 1, H0169: 1, H0372: 1, L0769: 1, L0637: 1, L0774: 1, L0805: 1, L0776: 1, L0527: 1, L0666: 1, S0374: 1, L0352: 1, H0547: 1, H0670: 1, H0660: 1, H0648: 1, H0539: 1, H0522: 1, L0748: 1, L0752: 1, H0445: 1, H0667: 1 and H0543: 1.			
HLYAJ79	1060495	924	218 - 292	3099	Lys-10 to Ser-19.	S0388: 5, H0594: 4, S0282: 3, H0598: 3, S0344: 3, S0136: 3, H0395: 2, S0280: 2, H0597: 2, S0194: 2,	17p13.3	113721, 247200, 600059, 601545	

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HCOOQ11	1060656	925	868 - 785	3100	L0665: 6, L0740: 6, L0659: 5, L0774: 4, L0775: 4, L0518: 4, L0748: 4, L0754: 4, L0749: 4, S0376: 3, S0002: 3, L0763: 3, L0766: 3, L0776: 3, L0666: 3, L0751: 3, L0747: 3, L0752: 3, L0762: 2, L0640: 2, L0769: 2, L0662: 2, L0768: 2, L0375: 2, L0438: 2, L0750: 2, L0755: 2, L0757: 2, L0603: 2, H0661: 1, L0717: 1, H0370: 1, H0581: 1, H0052: 1, H0545: 1, L0369: 1, L0772: 1, L0642: 1, L0764: 1, L0363: 1, L0767: 1, L0651: 1, L0806: 1, L0809: 1, L0528: 1, L0367: 1, L0791: 1, L0664: 1, H0689: 1, H0670: 1,	6p21.3	

						H0651: 1, H0521: 1, L0744: 1, L0439: 1, L0731: 1 and L0605: 1.		602475
HWMGI51	1060711	926	1 - 618	3101	Tyr-23 to Arg-29, Gln-57 to Cys-65, Cys-164 to Trp-169.	L0805: 9, L0776: 8, H0585: 7, L0731: 7, L0751: 3, L0747: 3, S0282: 2, H0606: 2, H0038: 2, L0769: 2, L0803: 2, L0809: 2, H0690: 2, L0777: 2, L0752: 2, L0758: 2, L0601: 2, H0170: 1, S0358: 1, S0360: 1, S0007: 1, S0476: 1, S0278: 1, H0370: 1, H0559: 1, L0622: 1, L0623: 1, T0114: 1, H0427: 1, L0021: 1, H0204: 1, H0086: 1, H0178: 1, S0051: 1, H0688: 1, H0213: 1, H0163: 1, H0087: 1, H0494: 1, S0440: 1, L0535: 1, L3904: 1, L0764: 1, L0662: 1, L0794: 1, L0774: 1, L0375: 1, L0376: 1, L0657: 1, L0526: 1, L0783: 1, L0383: 1, L0787: 1, H0144: 1,		

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HDPJG33	1060780	927	555 - 863	3102	Cys-38 to Thr-45, Ser-69 to Asp-79, Leu-81 to Gly-89, Pro-97 to Leu-103.	H0208: 1, H0024: 1, H0038: 1, L0776: 1, H0658: 1, H0521: 1 and H0665: 1.			
HLYAE20	1060967	928	801 - 1259	3103	Pro-10 to Arg-15, Gly-45 to Trp-57, Gly-77 to Pro-88.				
HKZAR86	1060972	929	1 - 1302	3104	Gln-1 to Arg-14, Leu-21 to Arg-32, Cys-44 to Cys-57.	L0771: 9, H0436: 6, H0494: 4, L0761: 4, L0789: 4, L0743: 4, H0656: 3, H0581: 3, L0764: 3, H0543: 3, H0580: 2, H0427: 2, H0538: 2, L0769: 2, L0806: 2, H0699: 2, H0689: 2, H0521: 2, L0755: 2, H0583: 1, H0341: 1, H0483: 1, H0662: 1, H0550: 1, S0222: 1, H0392: 1, H0486: 1, S0250: 1, H0488: 1, S0426: 1, L0800: 1, L0662: 1, L0768: 1, L0794: 1, L0766: 1, L0803: 1,		

						L0659: 1, S0374: 1, H0547: 1, H0593: 1, S0126: 1, H0435: 1, S0152: 1, L0780: 1, L0757: 1, L0758: 1, H0423: 1 and H0422: 1.		
HAOTX62	1061036	930	65 - 298	3105				
HOCQG58	1061180	931	3034 - 251	3106	Glu-22 to Ser-36, Gly-43 to Asp-74, Leu-83 to Leu-90, Glu-97 to Thr-106, Pro-135 to Arg-140, Lys-188 to Arg-201, Asp-330 to Asp-336, Thr-371 to Ser-381, Asp-413 to Trp-418, Tyr-454 to Lys-461, Gly-474 to Cys-479, Gly-511 to Asp-516, Glu-564 to Thr-573, Phe-640 to Ala-662, Arg-700 to Leu-706, Ala-737 to Tyr-743, Pro-800 to Gln-806, Ala-876 to Thr-881, Arg-921 to Leu-928.	H0617: 8, L0747: 8, L0769: 6, L0665: 5, L0758: 5, L0717: 4, L0794: 4, L0766: 4, L0659: 4, L0748: 4, H0181: 3, H0494: 3, L0638: 3, L0666: 3, H0658: 3, L0750: 3, L0757: 3, H0657: 2, H0255: 2, H0431: 2, H0318: 2, H0328: 2, T0006: 2, H0396: 2, S0426: 2, L0770: 2, L0771: 2, L0375: 2, L0805: 2, L0657: 2, L0384: 2, H0659: 2, L0744: 2, L0756: 2, L0779: 2, L0759: 2, L0596: 2, L0588: 2, L0599: 2, L0593: 2, S0026: 2, H0265: 1, H0685: 1, H0341: 1, H0663: 1, S0418: 1,		

		S0356: 1, S0358: 1, S0360: 1, S0132: 1, H0411: 1, H0550: 1, S0222: 1, H0441: 1, L0477: 1, L0021: 1, S0346: 1, T0048: 1, H0309: 1, H0009: 1, H0172: 1, L0483: 1, H0031: 1, H0628: 1, H0673: 1, H0674: 1, H0040: 1, H0551: 1, H0412: 1, T0004: 1, H0102: 1, L0351: 1, H0280: 1, H0560: 1, H0633: 1, S0344: 1, L0762: 1, L0501: 1, L0372: 1, L0764: 1, L0768: 1, L0803: 1, L0650: 1, L0806: 1, L0776: 1, L0656: 1, L0783: 1, L0790: 1, L2269: 1, L0565: 1, L0438: 1, H0547: 1, H0689: 1, H0435: 1, H0660: 1, H0672: 1, S0330: 1, S0406: 1, H0576: 1, L0742: 1, L0439: 1, L0740: 1, L0751: 1, L0754: 1, L0749: 1, L0752: 1,				

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HOFNH33	1061185	932	131 - 925	3107	Asp-78 to Gly-84, Glu-112 to Cys-117, Glu-202 to Val-207, Ser-219 to Ser-234, Pro-237 to Lys-252.	H0415: 2		
HAJAQ63	1061238	933	966 - 2816	3108	Met-29 to Glu-38, Ser-40 to Ala-48.	H0436: 65, H0521: 11, S0422: 9, L0439: 9, S0360: 8, L0754: 8, L0471: 7, H0581: 6, L0521: 6, H0520: 5, H0519: 5, H0171: 4, S0358: 4, H0580: 4, S0003: 4, H0529: 4, L0520: 4, L0666: 4, L0663: 4, L0664: 4, H0144: 4, H0547: 4, H0539: 4, L0581: 4, L0362: 4, H0624: 3, H0657: 3, S0444: 3, L0717: 3, S0474: 3, S0049: 3, H0052: 3, H0428: 3, H0553: 3, H0090: 3, H0616: 3, H0413: 3, L0774: 3,		

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HVVBK70	1061258	934	650 - 1276	3109	Arg-17 to Gly-46, Leu-84 to Pro-133, Glu-137 to Pro-149, Glu-179 to Gly-185, Arg-188 to Tyr-198.	L0731: 9, H0424: 6, L0754: 6, L0758: 5, L0662: 4, L0748: 4, L0747: 4, L0749: 4, L0623: 3, S0050: 3, H0038: 3, H0616: 3, L0659: 3, L0485: 3, H0685: 2, H0255: 2, H0642: 2, H0031: 2, L0657: 2, L0439: 2,		

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HVVBA82	1061332	935	3 - 500	3110	Arg-17 to Gln-23, Asn-63 to Gln-71.	L0748: 10, H0305: 6, H0150: 5, L0777: 5, L0731: 5, L0776: 4, L0809: 4, L0751: 4, S0358: 3, L0157: 3, L0774: 3, L0775: 3,		

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HWLLG38	1061388	936	99 - 692	3111	Gly-7 to Arg-14, Phe-77 to Gly-83, Ser-98 to Leu-106, Asp-114 to Tyr-120, Met-143 to Lys-156, Met-161 to Gly-167, Ala-178 to Ser-183.	H0622: 2, L0763: 2, L0776: 2, L0759: 2, S0358: 1, H0370: 1, H0486: 1, H0013: 1, H0428: 1, H0035: 1, H0591: 1, L0783: 1, H0144: 1, S0330: 1, L0439: 1 and L0756: 1.		
HTPCH84	1061466	937	1 - 978	3112	Pro-2 to Trp-11, Arg-73 to Glu-79, Pro-95 to Thr-103, Pro-106 to Phe-115, Asn-117 to Tyr-124, Thr-142 to Cys-149, Thr-177 to Pro-189,	AR052: 108, AR053: 84, AR096: 60, AR039: 52, AR061: 15, AR055: 14, AR089: 11, AR060: 8, AR033: 7, AR104: 6 H0494: 4, H0593: 3,		

				Ser-196 to Cys-208, Gly-219 to Asp-224, Pro-278 to Gly-283.	S0356: 1, S0045: 1, H0485: 1, H0486: 1, H0052: 1, H0545: 1, H0179: 1, H0039: 1 and S0148: 1.			
HWLHJ68	1061521	938	139 - 471	3113	Cys-17 to Lys-31.	AR052: 8, AR053: 6, AR039: 5, AR096: 5, AR033: 3, AR089: 3, AR104: 3, AR060: 3, AR055: 3, AR061: 2 H0651: 709, L0766: 5, L0754: 5, L0756: 3, L0803: 2, L0779: 2, L0759: 2, S0354: 1, H0643: 1, H0013: 1, H0194: 1, H0545: 1, H0373: 1, H0252: 1, H0615: 1, H0316: 1, H0040: 1, H0641: 1, H0647: 1, S0422: 1, L0598: 1, L0369: 1, L0520: 1, L0762: 1, L0649: 1, L0804: 1, L0527: 1, L0656: 1, H0144: 1, H0702: 1, H0547: 1, H0555: 1, H0436: 1, S0028: 1, L0746: 1, L0750: 1, L0777: 1, L0780: 1, L0752: 1 and L0686: 1.		

HLGDA34	1061543	939	2 - 193	3114	Pro-27 to His-34.	S0428: 2, H0610: 1, H0179: 1, H0271: 1 and S0052: 1.		
HAICB08	1061629	940	3 - 338	3115	Glu-7 to Gly-12, Ala-71 to Leu-79, Ser-98 to Asp-103.	S0132: 1		
HVVAW60	1061694	941	208 - 741	3116	Pro-18 to Asn-25, Ala-44 to Asn-50, Arg-56 to Lys-64, Gly-76 to Gly-85, Lys-92 to Leu-98, Gly-116 to Gly-121, Gln-132 to His-138, Thr-159 to Asp-167.	L0794: 5, L0803: 3, L0518: 3, L0748: 3, H0556: 2, S0360: 2, S0422: 2, L0783: 2, L0809: 2, L0438: 2, L0740: 2, L0754: 2, L0747: 2, L0779: 2, L0777: 2, L0757: 2, L0588: 2, L0594: 2, H0171: 1, T0002: 1, H0657: 1, H0638: 1, S0132: 1, H0369: 1, H0441: 1, H0431: 1, H0497: 1, S0280: 1, S0010: 1, H0318: 1, H0263: 1, H0544: 1, T0003: 1, H0373: 1, H0201: 1, H0032: 1, H0673: 1, H0068: 1, H0038: 1, H0551: 1, S0426: 1, L0640: 1, L0763: 1, L0638: 1, L0662: 1, L0768: 1, L0804: 1, L0774: 1,		

					L0806: 1, L0805: 1, L0787: 1, H0660: 1, H0672: 1, S0328: 1, S3014: 1, L0749: 1, L0759: 1, H0445: 1, L0581: 1 and H0216: 1.			
HPDVB50	1061708	942	3 - 206	3117	Cys-4 to Asp-16, Lys-36 to Tyr-41, Pro-48 to Asp-68.	L0748: 26, L0754: 20, L0747: 9, L0756: 8, L0777: 8, L0752: 8, L0744: 6, L0740: 6, L0757: 6, H0046: 5, H0553: 5, L0766: 5, L0803: 5, L0775: 5, L0755: 5, L0759: 5, S0418: 4, S0010: 4, L0662: 4, L0794: 4, L0774: 4, L0806: 4, L0438: 4, L0731: 4, L0758: 4, S0212: 3, S0358: 3, H0632: 3, H0635: 3, H0156: 3, H0052: 3, S0003: 3, S0152: 3, H0436: 3, S0037: 3, S0028: 3, L0750: 3, L0615: 2, H0556: 2, S0420: 2, H0619: 2, H0559: 2, H0013: 2, H0575: 2, H0421: 2, H0251: 2, H0545: 2, H0687: 2,	4q26		147680, 189800, 600919, 601542

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		H0510: 1, H0266: 1, S0250: 1, H0328: 1, H0622: 1, H0030: 1, H0644: 1, H0032: 1, H0211: 1, H0090: 1, H0372: 1, H0040: 1, T0067: 1, H0412: 1, H0413: 1, H0100: 1, T0041: 1, H0509: 1, S0150: 1, H0641: 1, S0422: 1, L0769: 1, L0646: 1, L0773: 1, L0521: 1, L0767: 1, L0768: 1, L0650: 1, L0376: 1, L0776: 1, L0655: 1, L0661: 1, L0512: 1, L0783: 1, L0791: 1, L0666: 1, H0520: 1, H0593: 1, H0414: 1, H0648: 1, H0672: 1, S0328: 1, H0539: 1, S0378: 1, S0146: 1, H0555: 1, H0626: 1, S3012: 1, S0206: 1, L0439: 1, L0751: 1, L0749: 1, L0786: 1, L0779: 1, H0445: 1, L0599: 1, L0608: 1, S0026: 1, H0665: 1, H0667: 1,				

HAZAY40	1061765	943	3 - 1631	3118	Ser-24 to Lys-55, Glu-67 to Ala-72, Leu-74 to Pro-88, Lys-104 to Tyr-119, Ile-121 to Pro-132, Ser-138 to Glu-148, Asp-158 to Pro-167, Glu-177 to Asp-203, Ser-208 to Gln-218, Pro-221 to Pro-227, Gln-229 to Pro-236, Ser-246 to Asn-254, Pro-268 to Thr-279, Arg-281 to Thr-288, Pro-295 to Asp-301, Val-305 to Val-315, Ala-318 to Asn-344, Glu-351 to Pro-366, Ala-415 to Gly-424, Val-470 to Ser-475, Leu-480 to Gly-485, Pro-511 to Cys-522.	H0543: 1, H0423: 1, S0424: 1, S0452: 1, S0460: 1 and S0384: 1.	L0439: 10, H0013: 7, L0438: 4, L0758: 4, L0599: 3, H0171: 2, H0632: 2, S0388: 2, T0010: 2, S0250: 2, H0553: 2, H0644: 2, L0662: 2, L0754: 2, L0747: 2, L0749: 2, L0779: 2, L0777: 2, L0591: 2, S0376: 1, S0045: 1, S0222: 1, H0461: 1, L0623: 1, H0244: 1, H0427: 1, S0280: 1, H0575: 1, H0036: 1, S0346: 1, H0327: 1, H0024: 1, H0051: 1, S0051: 1, H0039: 1, T0006: 1, H0383: 1, H0316: 1, S0036: 1, H0038: 1, H0268: 1, L0351: 1, H0280: 1, H0494: 1, L0769: 1, L0637: 1, L0646: 1, L0768: 1, L0649: 1, L0650: 1, L0805: 1, L0776: 1, L0659: 1, L0783: 1,		

HACMZ51	1061766	944	61 - 1617	3119	Ala-38 to Thr-45, Ser-70 to Asp-77, Ser-85 to Asp-90, Asp-139 to Gly-145, Ile-207 to Asp-213, Arg-229 to Met-234, Gly-259 to Ser-264, Ile-281 to Ser-288, Asp-337 to Leu-343, Gln-369 to Ile-376, Gly-429 to Ser-440, Gln-448 to Val-456, Gln-461 to Thr-474.	H0144: 1, H0690: 1, H0659: 1, H0660: 1, H0648: 1, S0330: 1, H0539: 1, S0037: 1, L0731: 1, L0608: 1, L0595: 1 and L0366: 1.	L0777: 21, L0439: 18, H0052: 15, S0010: 12, H0013: 11, L0770: 11, L0749: 11, H0144: 10, L0748: 10, L0754: 10, L0747: 10, H0521: 9, S0222: 8, S0051: 8, S0036: 8, L0659: 8, L0740: 8, L0752: 8, L0758: 8, L0595: 8, S0278: 7, S0440: 7, L0744: 7, L0592: 7, H0457: 6, H0623: 6, L0646: 6, H0547: 6, S0152: 6, L0601: 6, H0575: 5, S0049: 5, H0046: 5, L0471: 5, H0551: 5, L0664: 5, L0665: 5, H0520: 5, S3014: 5, S0260: 5, L0599: 5, H0556: 4, S6024: 4, S0418: 4, S0354: 4, S0360: 4, S0388: 4, H0615: 4,		

		S0038: 4, H0100: 4, S0344: 4, S0002: 4, L0764: 4, L0774: 4, S0027: 4, L0745: 4, L0759: 4, L0596: 4, S0196: 4, H0543: 4, H0717: 3, H0638: 3, S0420: 3, S0442: 3, S0358: 3, H0619: 3, S6026: 3, H0586: 3, H0486: 3, H0156: 3, H0599: 3, S0346: 3, L0157: 3, H0428: 3, H0622: 3, T0006: 3, H0031: 3, H0038: 3, H0529: 3, L0771: 3, L0766: 3, L0789: 3, L0438: 3, S0028: 3, L0750: 3, L0753: 3, L0731: 3, L0757: 3, L0366: 3, H0542: 3, L0600: 3, H0624: 2, H0171: 2, S0116: 2, H0483: 2, H0305: 2, L0005: 2, S0376: 2, S0408: 2, S0007: 2, S0046: 2, S0132: 2, S0300: 2, H0351: 2, H0261: 2, H0370: 2, H0438: 2, S0280: 2,				

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HUXAL63	1061790	945	2 - 1300	3120	Thr-6 to Leu-24, Gly-87 to Ala-92, Ser-103 to Ser-118, Asp-127 to Asn-135, Gln-141 to Phe-147, Thr-149 to Arg-159, Phe-330 to Ala-338, Pro-390 to Thr-398.	S0011: 1, S0026: 1, S0192: 1, H0423: 1 and H0352: 1.	L0794: 6, L0766: 6, L0758: 6, L0665: 4, L0439: 4, L0779: 4, H0590: 3, L0598: 3, L0763: 3, L0666: 3, H0648: 3, L0754: 3, L0362: 3, H0506: 3, H0657: 2, H0661: 2, S0438: 2, L0646: 2, L0803: 2, L0375: 2, L0806: 2, L0809: 2, L0438: 2, L0744: 2, L0740: 2, L0747: 2, L0731: 2, S0434: 2, L0589: 2, H0713: 1, S0114: 1, H0583: 1, H0255: 1, H0669: 1, H0663: 1, S0222: 1, H0497: 1, L0021: 1, L0022: 1, H0036: 1, H0052: 1, L0163: 1, H0239: 1, H0179: 1, H0615: 1, H0553: 1, H0163: 1, H0038: 1, H0100: 1, S0440: 1, S0422: 1, S0426: 1, UNKWN: 1, L5575: 1,		

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HLCLX57	1061886	946	3 - 953	3121	Lys-20 to Glu-27.	S0126: 9, H0622: 6, L0777: 5, S0250: 4, H0551: 4, S0045: 3, L0659: 3, L0809: 3, L0565: 3, L0757: 3, S0196: 3, S0212: 2, S0046: 2, H0619: 2, H0575: 2, H0591: 2, L0375: 2, L0805: 2, L0665: 2, L0743: 2, T0049: 1, S0420: 1, S0356: 1, S0360: 1, H0437: 1, H0586: 1, H0486: 1, H0013: 1, H0156: 1, L0021: 1, H0042: 1, H0618: 1,		

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HMALF63	1061935	947	318 - 1130	3122	Gly-13 to Arg-19, Glu-28 to Glu-64, Glu-81 to Asp-88, Leu-103 to Asn-109, Ile-132 to Gln-144, Glu-148 to Leu-157, Met-188 to Tyr-193, Ser-223 to Thr-230.	L0439: 48, H0013: 25, H0521: 21, S0152: 17, H0090: 13, S0010: 9, S0126: 9, H0543: 9, H0553: 8, H0591: 8, H0144: 8, S0192: 8, H0556: 7, H0038: 7, H0551: 7, H0494: 7, S0240: 7, L0740: 7, L0758: 7, S0256: 6, S0132: 6, S0474: 6, L0666: 6, L0596: 6,	2p25.2-p25.1	

		L0595: 6, H0667: 6, S0414: 5, H0575: 5, H0581: 5, L0483: 5, H0641: 5, L0764: 5, L0438: 5, H0519: 5, L0751: 5, L0747: 5, L0731: 5, L0757: 5, H0661: 4, H0662: 4, S0354: 4, S0376: 4, S0046: 4, S0222: 4, H0052: 4, H0266: 4, S0214: 4, H0031: 4, H0040: 4, L0662: 4, H0520: 4, H0539: 4, H0522: 4, S0206: 4, L0748: 4, L0754: 4, H0542: 4, S0134: 3, H0657: 3, S0358: 3, H0580: 3, H0586: 3, H0009: 3, H0050: 3, L0471: 3, H0201: 3, H0039: 3, H0644: 3, H0032: 3, H0598: 3, H0616: 3, S0142: 3, S0344: 3, L0773: 3, L0794: 3, L0649: 3, L0659: 3, L0663: 3, H0435: 3, H0658: 3, H0660: 3, S0330: 3, S0270: 3, L0752: 3,				

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HACMR36	1062057	948	1 - 1515	3123	Gly-20 to Gly-25, Leu-47 to Pro-56, Gly-63 to Glu-68, Glu-87 to Ala-99.	L0717: 3, H0618: 2, H0617: 2, L5566: 2, L0649: 2, L0666: 2, H0685: 1, H0716: 1, H0306: 1, S0360: 1, S0045: 1, S0222: 1, H0370: 1, H0392: 1,		

					H0427: 1, H0622: 1, L0640: 1, L0763: 1, L0637: 1, L5565: 1, L0373: 1, L0641: 1, L0648: 1, L0364: 1, L0766: 1, L0663: 1, L0665: 1, H0690: 1, L0748: 1, L0779: 1, L0599: 1 and L0595: 1.		
HAOSM08	1062079	949	80 - 2338	3124	L0794: 13, L0803: 9, H0013: 7, L0438: 6, L0758: 6, T0010: 5, L0439: 5, L0591: 5, H0413: 4, H0144: 4, L0742: 4, L0751: 4, L0731: 4, S0007: 3, H0038: 3, H0494: 3, L0755: 3, L0601: 3, H0170: 2, H0686: 2, S0418: 2, S0408: 2, S0046: 2, H0619: 2, H0050: 2, S6028: 2, H0268: 2, L0598: 2, L0770: 2, L0800: 2, L0764: 2, L0659: 2, L0666: 2, L0663: 2, L0665: 2, H0547: 2, H0658: 2, S0152: 2, L0741: 2, L0754: 2, L0747: 2, L0750: 2,	5	

		L0779: 2, L0752: 2, L0759: 2, L0588: 2, L0592: 2, L0411: 1, H0624: 1, S0001: 1, S0420: 1, H0329: 1, S0045: 1, S0132: 1, S6026: 1, H0437: 1, H0592: 1, L0021: 1, H0575: 1, S0010: 1, H0318: 1, H0251: 1, T0115: 1, H0046: 1, H0569: 1, H0014: 1, H0373: 1, H0266: 1, S0250: 1, H0328: 1, H0622: 1, H0032: 1, H0616: 1, H0412: 1, H0056: 1, H0623: 1, S0386: 1, H0100: 1, L0351: 1, L0564: 1, H0509: 1, L4747: 1, L0644: 1, L0804: 1, L0775: 1, L0375: 1, L0776: 1, L0809: 1, L0790: 1, L0532: 1, H0520: 1, H0670: 1, S0146: 1, H0555: 1, S0028: 1, L0748: 1, L0740: 1, L0777: 1, L0753: 1, L0757: 1, H0445: 1, L0605: 1,				

HTEFM89	1062084	950	380 - 1234	3125	Ala-18 to His-32, Tyr-51 to Phe-56, Asn-100 to Arg-106, His-140 to Gly-153, Ser-167 to Gly-193, Ser-205 to Asp-214, Trp-237 to Thr-244, Asp-268 to Gln-274.	S0242: 1 and S0276: 1. H0038: 4, L0758: 2, S0040: 1, H0125: 1, S0420: 1, H0622: 1, H0634: 1, H0616: 1, H0623: 1, T0042: 1 and H0560: 1.		
HCHAK72	1062123	951	2 - 1183	3126	Pro-18 to Thr-25, Ser-36 to Tyr-45, Met-68 to Tyr-77, Gly-148 to Ser-154, Ser-234 to Gly-242, Asn-267 to Asp-274, Cys-337 to Gly-342, Met-388 to Thr-394.	AR039: 25, AR089: 23, AR096: 18, AR053: 16, AR060: 15, AR033: 14, AR055: 10, AR104: 9, AR061: 7 L0766: 3, S0356: 2, S0222: 2, H0266: 2, H0616: 2, S0422: 2, L0794: 2, L0655: 2, L0664: 2, H0672: 2, L0777: 2, L0731: 2, H0422: 2, H0171: 1, H0657: 1, S0116: 1, H0341: 1, H0483: 1, H0449: 1, S0376: 1, S0045: 1, H0587: 1, H0497: 1, H0421: 1, H0327: 1, H0057: 1, H0014: 1, H0375: 1, S6028: 1, S0003: 1, S0214: 1, H0328: 1,		

					H0644: 1, H0032: 1, H0090: 1, H0038: 1, H0087: 1, H0264: 1, H0268: 1, H0529: 1, L0762: 1, L0638: 1, L0771: 1, L0521: 1, L0803: 1, L0657: 1, L0659: 1, L0783: 1, L0666: 1, L0665: 1, H0658: 1, H0521: 1, S0176: 1, S0406: 1, L0439: 1, L0779: 1 and L0758: 1.		
HPAME12	1062139	952	2 - 1654	3127	Phe-16 to Arg-24, Pro-31 to Thr-41, Leu-50 to Gly-63, Leu-132 to Asp-138, Gln-152 to Val-160, Gln-178 to Lys-188, Leu-196 to Glu-205, Pro-207 to Lys-213, Gly-221 to Ala-228, Glu-239 to Phe-245, Asp-257 to Ser-264, Ala-301 to Tyr-306, Phe-327 to Trp-334, Lys-371 to Lys-384, Glu-419 to Ala-426, Ile-447 to Phe-454, Val-475 to Thr-483,	H0422: 4, S0222: 3, L0775: 3, L0754: 3, H0171: 2, H0013: 2, H0635: 2, H0024: 2, L0493: 2, L0518: 2, L0438: 2, H0522: 2, L0740: 2, L0756: 2, L0755: 2, L0731: 2, L0757: 2, S0260: 2, H0170: 1, S0402: 1, S0376: 1, H0580: 1, H0574: 1, H0486: 1, L0021: 1, H0098: 1, H0036: 1, H0545: 1, S0048: 1, H0622: 1, H0031: 1, H0644: 1, H0032: 1, H0598: 1,	10		

					Leu-516 to Gln-522, Glu-528 to Asn-537.	S0036: 1, H0163: 1, H0591: 1, H0494: 1, H0641: 1, L0762: 1, L0646: 1, L0662: 1, L0794: 1, L0804: 1, L0783: 1, L0809: 1, L0666: 1, H0144: 1, S0374: 1, H0547: 1, H0689: 1, H0682: 1, S0328: 1, H0518: 1, S0152: 1, S3014: 1, S0032: 1, L0744: 1, L0747: 1, L0750: 1, L0777: 1, H0595: 1, L0599: 1, H0667: 1 and H0423: 1.	
HPCQK37	1062260	953	3 - 830	3128	Ser-93 to Pro-99, Asn-214 to Gly-220, Thr-255 to Ala-268.	S0136: 47, L0769: 10, L0439: 7, L0750: 7, H0620: 5, L0776: 5, H0519: 5, L0740: 5, L0752: 5, H0341: 4, H0545: 4, S0440: 4, L0805: 4, L0509: 4, L0809: 4, L0666: 4, L0748: 4, S0436: 4, H0624: 3, H0265: 3, H0556: 3, S0418: 3, H0393: 3, L0717: 3, H0266: 3, S0422: 3, L0764: 3, L0659: 3,	

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HCE4F10	1062309	954	977 - 3	3129	Glu-27 to Thr-34, His-253 to Tyr-281, Glu-290 to Asp-295.	H0052: 3, H0050: 2, H0650: 1, H0657: 1, S0212: 1, S0358: 1, S0045: 1, H0586: 1,		

						H0575: 1, H0046: 1, H0292: 1, H0328: 1, H0622: 1, H0135: 1, L0766: 1, S0374: 1, H0648: 1, H0539: 1, H0521: 1, L0750: 1, L0591: 1, H0542: 1 and S0460: 1.		
HBCBE63	1062328	955	32 - 790	3130	Ser-4 to Gln-21, His-33 to Pro-38, Arg-80 to Ser-87, Lys-133 to Tyr-139, Gln-162 to Phe-168, Ala-173 to Lys-179, Glu-198 to Glu-204, Ala-212 to Asn-218, Ser-238 to Arg-245.	S0358: 1, H0370: 1, H0270: 1, H0122: 1, H0253: 1, H0545: 1, H0046: 1, H0015: 1, L0669: 1, H0617: 1, H0032: 1, H0038: 1, H0616: 1, H0658: 1, S0436: 1 and L0596: 1.			
HSSJO19	1062346	956	409 - 248	3131	Arg-1 to Pro-12, Leu-29 to Gln-41.	L0439: 5, L0764: 2, H0660: 2, L0749: 2, S0031: 2, L0591: 2, H0486: 1, L0471: 1, H0424: 1, H0135: 1, L0763: 1, L0769: 1, L0639: 1, L0771: 1, L0375: 1, L0784: 1, L0776: 1, H0478: 1 and L0747: 1.			
HE8NQ23	1062369	957	574 - 1419	3132		AR060: 2, AR061: 2, AR055: 1, AR096: 1, AR033: 1, AR039: 1,			

					AR089: 0, AR104: 0, AR053: 0 L0665: 12, L0666: 5, L0794: 4, L0664: 4, L0759: 4, H0574: 3, L0657: 3, H0031: 2, H0553: 2, H0624: 1, H0632: 1, H0013: 1, H0328: 1, L0598: 1, L0369: 1, L0645: 1, L0662: 1, H0144: 1, H0660: 1 and S0406: 1.		
HTELJ95	1062431	958	95 - 949	3133	Ala-24 to Glu-29, Glu-91 to Arg-110, Arg-115 to Trp-124, Ser-126 to Asp-140, Tyr-156 to Phe-161, Lys-209 to Asp-215, Gly-224 to Thr-230, Pro-254 to Phe-261, Thr-266 to Asp-285.	L0766: 5, L0748: 5, L0362: 4, L0755: 3, H0170: 2, H0265: 2, H0328: 2, H0494: 2, L0776: 2, L0747: 2, L0750: 2, L0731: 2, L0758: 2, H0650: 1, H0657: 1, S0001: 1, H0638: 1, S0418: 1, H0329: 1, S0007: 1, L0717: 1, T0039: 1, L0021: 1, H0097: 1, H0544: 1, L0163: 1, S0388: 1, S0051: 1, H0266: 1, S0003: 1, S0214: 1, H0615: 1, H0616: 1, H0269: 1, H0623: 1, T0041: 1,		

					T0042: 1, H0538: 1, S0422: 1, L0763: 1, L0794: 1, L0803: 1, L0375: 1, H0144: 1, H0659: 1, S0330: 1, L0756: 1, L0780: 1, L0752: 1, L0588: 1, L0592: 1, H0668: 1, H0422: 1, L0697: 1 and S0384: 1.		
HTPCP50	1062435	959	3 - 2138	3134	Pro-9 to Lys-24, Ser-39 to Lys-46, Asp-80 to Asn-86, Gln-89 to Ser-103, Phe-112 to Thr-123, Gln-260 to Ser-272, Asp-283 to His-289, Pro-341 to Glu-351, Met-362 to Thr-368, Arg-382 to Arg-389, Asn-396 to Gly-410, Tyr-415 to His-427, Ile-477 to Lys-486, Tyr-575 to Thr-580, Lys-692 to Leu-700.	AR096: 4, AR055: 4, AR053: 3, AR089: 2, AR033: 2, AR052: 2, AR061: 2, AR060: 2, AR104: 2, AR039: 1 L0747: 5, H0623: 4, S0212: 3, S0045: 3, H0586: 3, H0427: 3, S0028: 3, L0439: 3, L0749: 3, L0599: 3, L0415: 2, S0046: 2, H0553: 2, H0412: 2, L0662: 2, L0659: 2, S0146: 2, H0713: 1, H0716: 1, T0049: 1, H0662: 1, S0356: 1, H0722: 1, H0486: 1, S0280: 1, H0575: 1, H0024: 1, H0375: 1, H0266: 1, H0428: 1,		

					H0039: 1, T0006: 1, H0032: 1, H0090: 1, H0268: 1, H0413: 1, H0509: 1, L0375: 1, L0789: 1, L0666: 1, S0126: 1, H0670: 1, H0539: 1, H0521: 1, S0032: 1, L0754: 1, L0779: 1, L0759: 1, H0444: 1 and S0434: 1.	11		
HKGBU67	1062496	960	779 - 201	3135	Gly-1 to His-6, Thr-55 to Gln-61, Cys-63 to Asp-70, Gly-132 to Gly-137, Lys-146 to Gly-152, Pro-174 to Lys-182.	L0777: 6, S0358: 3, L0372: 3, L0750: 3, L0755: 3, S0422: 2, L0766: 2, L0663: 2, S0152: 2, L0779: 2, L0588: 2, L0605: 2, H0685: 1, H0341: 1, H0255: 1, S0376: 1, S0410: 1, H0592: 1, H0497: 1, H0009: 1, L0471: 1, H0373: 1, S0214: 1, H0615: 1, H0090: 1, H0494: 1, H0509: 1, H0538: 1, L0769: 1, L0761: 1, L0646: 1, L0764: 1, L0771: 1, L0773: 1, L0794: 1, L0774: 1, L0775: 1, L0655: 1, L0789: 1, L0665: 1,			

						H0697: 1, H0520: 1, H0435: 1, S0044: 1, H0555: 1, L0747: 1, L0749: 1, L0753: 1, L0759: 1, H0445: 1, L0581: 1, H0423: 1 and H0712: 1.		
HFKIT82	1062544	961	2 - 1663	3136	Pro-10 to Val-15, Ala-42 to Lys-48, Asn-99 to Glu-104, Ile-114 to Gln-119, Asp-130 to Gly-137, Leu-167 to Tyr-175, Pro-187 to Glu-192, Arg-219 to Pro-224, Ala-233 to Thr-240.	AR039: 4, AR089: 3, AR055: 3, AR096: 3, AR060: 2, AR053: 2, AR104: 2, AR061: 1, AR033: 1 L0439: 6, H0620: 4, L0758: 2, S0040: 1, H0661: 1, H0619: 1, H0549: 1, H0587: 1, H0013: 1, L0021: 1, H0230: 1, H0373: 1, H0135: 1, L0770: 1, L0769: 1, L0776: 1, L0659: 1, L0783: 1, H0144: 1, H0519: 1, H0593: 1, H0682: 1, H0659: 1, L0751: 1, L0753: 1 and L0759: 1.		
HE2LW42	1062574	962	1300 - 1079	3137		H0624: 5, L0748: 4, S0222: 3, H0441: 2, H0013: 2, H0144: 2, L0745: 2, H0170: 1, H0171: 1, S0007: 1,		

HOGCE44	1062586	963	141 - 2561	3138	Glu-46 to Ser-59, Asn-85 to Ser-98.	H0156: 1, L0471: 1, H0051: 1, H0604: 1, H0135: 1, S0386: 1, L0521: 1, L0776: 1 and L0754: 1.	20p13	192340, 234200
						L0743: 7, L0731: 7, H0024: 5, H0264: 5, H0547: 5, L0439: 5, L0756: 5, L0764: 4, L0777: 4, L0752: 4, H0622: 3, H0163: 3, S0386: 3, H0529: 3, L0769: 3, L0809: 3, H0144: 3, H0435: 3, L0748: 3, L0747: 3, S0412: 3, S0040: 2, S0116: 2, H0341: 2, S0358: 2, S0444: 2, S0360: 2, H0549: 2, H0013: 2, H0036: 2, S0010: 2, H0318: 2, S0474: 2, H0050: 2, H0083: 2, H0266: 2, H0615: 2, T0006: 2, H0031: 2, H0644: 2, H0135: 2, S0002: 2, L0770: 2, L0771: 2, L0649: 2, L0803: 2, L0776: 2, L0438: 2, H0520: 2, H0539: 2,		

		H0518: 2, S0404: 2, S3014: 2, S0028: 2, L0741: 2, L0751: 2, L0750: 2, S0434: 2, L0605: 2, L0591: 2, L0362: 2, H0624: 1, H0171: 1, H0265: 1, S6024: 1, S0134: 1, H0583: 1, L0414: 1, S0282: 1, H0402: 1, S0356: 1, S0442: 1, S0376: 1, S0132: 1, H0619: 1, L0717: 1, H0437: 1, H0550: 1, H0600: 1, H0587: 1, H0486: 1, T0114: 1, H0635: 1, S0280: 1, H0042: 1, H0575: 1, H0590: 1, T0048: 1, H0581: 1, H0052: 1, H0596: 1, H0009: 1, L0471: 1, T0010: 1, S6028: 1, H0188: 1, H0428: 1, L0483: 1, H0553: 1, H0032: 1, H0674: 1, H0124: 1, S0036: 1, H0090: 1, H0591: 1, H0038: 1, H0616: 1, H0551: 1, H0268: 1, H0623: 1,				

					H0100: 1, H0560: 1, S0142: 1, H0538: 1, S0422: 1, S0426: 1, L0762: 1, L0763: 1, L0638: 1, L0761: 1, L0772: 1, L0768: 1, L0794: 1, L0766: 1, L0775: 1, L0375: 1, L0655: 1, L0783: 1, L0519: 1, L0789: 1, L0791: 1, L0666: 1, L0664: 1, S0374: 1, S0126: 1, H0689: 1, H0659: 1, H0521: 1, S0176: 1, S0406: 1, H0436: 1, L0759: 1, S0031: 1, S0260: 1, S0436: 1, L0608: 1, S0011: 1, S0242: 1, S0194: 1, S0276: 1, H0542: 1 and S0460: 1.	19q13.1-q13.2	107741, 113900, 122720, 122720, 126340, 126391, 160900, 164731, 172400,
HOVJJ72	1062626	964	547 - 1782	3139	His-30 to His-35.	L0777: 5, L0750: 4, L0758: 4, H0549: 2, H0550: 2, H0333: 2, H0687: 2, H0688: 2, L0809: 2, L0743: 2, H0265: 1, H0556: 1, S0358: 1, H0645: 1, H0599: 1, H0575: 1, H0618: 1, H0123: 1,		

					H0428: 1, H0163: 1, H0646: 1, L0770: 1, L0769: 1, L0637: 1, L0772: 1, L0774: 1, L0378: 1, L0806: 1, L0663: 1, S0330: 1, H0539: 1, S0190: 1, H0540: 1, L0744: 1, L0748: 1, L0747: 1, L0779: 1, L0780: 1, L0731: 1, S0276: 1 and S0424: 1.		172400, 173850, 180901, 180901, 207750, 221770, 248600, 258501, 600918, 602716
HODBT14	1062628	965	3 - 326	3140	Gln-1 to Glu-8, Ser-17 to Asn-23, Glu-48 to Leu-54, Asn-78 to Ser-83.	H0328: 2 and H0581: 1.		
HBOEB83	1062629	966	1 - 1392	3141	Ala-1 to Ser-6, Thr-16 to Gln-23, Pro-28 to Asn-34, Glu-43 to Cys-49, Asp-95 to Gly-100.	H0328: 9, L0659: 7, L0662: 6, H0135: 4, L0750: 4, S0360: 3, H0329: 3, H0373: 3, L0375: 3, L0744: 3, H0392: 2, H0046: 2, S0364: 2, H0163: 2, H0100: 2, L0743: 2, S0356: 1, S0222: 1, H0486: 1, H0618: 1, H0439: 1, L0471: 1, S0362: 1, H0038: 1, L0520: 1, L0769: 1, L0637: 1, L0650: 1,	5q13	126060, 143200, 143200, 181510, 253200, 268800, 268800, 600354, 600354, 600354

						L0789: 1, L0664: 1, H0144: 1, H0690: 1, H0660: 1, S0028: 1, L0740: 1, L0759: 1, L0589: 1, S0242: 1 and H0352: 1.		
HODCT96	1062631	967	2 - 541	3142	Lys-1 to Glu-7, Thr-20 to Glu-35, Ser-54 to Glu-62.	AR039: 26, AR033: 17, AR104: 17, AR052: 15, AR053: 15, AR096: 14, AR060: 14, AR089: 13, AR055: 12, AR061: 7 H0617: 8, L0747: 8, L0769: 6, L0665: 5, L0758: 5, L0717: 4, L0794: 4, L0766: 4, L0659: 4, L0748: 4, H0181: 3, H0494: 3, L0638: 3, L0666: 3, H0658: 3, L0750: 3, L0757: 3, H0657: 2, H0255: 2, H0431: 2, H0318: 2, H0328: 2, T0006: 2, H0396: 2, S0426: 2, L0770: 2, L0771: 2, L0375: 2, L0805: 2, L0657: 2, L0384: 2, H0659: 2, L0744: 2, L0756: 2, L0779: 2,		

		L0596: 2, L0588: 2, L0599: 2, L0593: 2, S0026: 2, H0265: 1, H0685: 1, H0341: 1, H0663: 1, S0418: 1, S0356: 1, S0358: 1, S0360: 1, S0132: 1, H0411: 1, H0550: 1, S0222: 1, H0441: 1, L0477: 1, L0021: 1, S0346: 1, T0048: 1, H0309: 1, H0009: 1, H0172: 1, L0483: 1, H0031: 1, H0628: 1, H0673: 1, H0674: 1, H0040: 1, H0551: 1, H0412: 1, T0004: 1, H0102: 1, L0351: 1, H0280: 1, H0560: 1, H0633: 1, S0344: 1, L0762: 1, L0501: 1, L0372: 1, L0764: 1, L0768: 1, L0803: 1, L0650: 1, L0806: 1, L0776: 1, L0656: 1, L0783: 1, L0790: 1, L2269: 1, L0565: 1, L0438: 1, H0547: 1, H0689: 1, H0435: 1, H0660: 1, H0672: 1,			

						S0330: 1, S0406: 1, H0576: 1, L0742: 1, L0439: 1, L0740: 1, L0751: 1, L0754: 1, L0749: 1, L0752: 1, L0755: 1, L0731: 1, S0031: 1, H0445: 1, L0587: 1, L0592: 1, L0485: 1, L0595: 1, L0601: 1, H0668: 1, S0192: 1 and S0194: 1.		
HTXJE60	1062655	968	60 - 1124	3143	Asp-32 to Leu-43, Leu-47 to Arg-53, Glu-95 to Phe-102, Leu-123 to Val-130, Leu-146 to Gly-154, Asp-186 to Glu-192, Glu-246 to Ser-255, Asp-296 to Arg-302, Ser-334 to Ala-347.	S0360: 2, H0266: 2, S0330: 2, L0748: 2, H0556: 1, S0442: 1, S0358: 1, S0046: 1, L0471: 1, H0024: 1, H0634: 1, H0494: 1, H0560: 1, L0800: 1, L0803: 1, H0593: 1, H0435: 1, H0651: 1, H0521: 1, H0522: 1, S0406: 1, L0747: 1 and S0452: 1.		
HUSIQ62	1062679	969	83 - 814	3144	Thr-1 to Glu-10, Arg-20 to Leu-26, Gly-37 to Ser-49, Cys-58 to Ser-69, Lys-79 to Lys-85, Ser-88 to Glu-96, Ala-99 to Ser-135,	S0422: 8, H0710: 8, S0116: 7, L0471: 7, H0542: 7, H0580: 6, T0042: 6, H0547: 6, H0659: 6, L0748: 6, H0486: 5, H0543: 5, H0656: 4, H0341: 4,	4q31	107250, 181600, 189800, 266300

					Ser-142 to Glu-151, Ser-169 to Lys-192, Ala-199 to Glu-244.	S0360: 4, S0440: 4, S0406: 4, L0747: 4, S0444: 3, H0318: 3, H0581: 3, H0428: 3, H0551: 3, L0667: 3, L0662: 3, L0766: 3, L0655: 3, L0666: 3, L0749: 3, L0758: 3, L0362: 3, H0668: 3, T0002: 2, H0650: 2, H0662: 2, H0393: 2, H0497: 2, H0013: 2, H0266: 2, H0412: 2, S0150: 2, H0529: 2, L0646: 2, L0375: 2, L0606: 2, H0144: 2, H0698: 2, H0521: 2, L0740: 2, L0750: 2, L0588: 2, L0605: 2, L0608: 2, S0192: 2, H0170: 1, L0615: 1, H0686: 1, H0685: 1, S0040: 1, H0663: 1, H0402: 1, H0449: 1, H0459: 1, S0418: 1, S0420: 1, S0358: 1, S0376: 1, H0369: 1, H0069: 1, L0021: 1, T0082: 1, H0421: 1, H0744: 1, H0251: 1,		

		H0457: 1, H0620: 1, H0350: 1, H0629: 1, H0375: 1, H0267: 1, H0252: 1, H0553: 1, S0366: 1, H0163: 1, H0090: 1, H0040: 1, H0264: 1, H0413: 1, L0475: 1, H0560: 1, H0561: 1, H0641: 1, H0538: 1, L0769: 1, L5575: 1, L0761: 1, L0373: 1, L0372: 1, L0800: 1, L0768: 1, L0364: 1, L0774: 1, L0806: 1, L0652: 1, L0657: 1, L0656: 1, L3872: 1, L5623: 1, L0789: 1, L0790: 1, L0792: 1, L0663: 1, L0664: 1, L0665: 1, H0702: 1, H0699: 1, S0374: 1, H0723: 1, H0726: 1, H0520: 1, H0519: 1, S0126: 1, H0682: 1, H0683: 1, H0684: 1, H0660: 1, H0666: 1, S0328: 1, S0380: 1, H0696: 1, L0744: 1, L0779: 1, L0755: 1, H0445: 1,				

							S0434: 1, L0591: 1 and S0026: 1.		
HPCTC48	1062686	970	206 - 361	3145	Arg-1 to Gly-14, Glu-24 to Ile-34, Glu-40 to Phe-52.	H0659: 1 and L0758: 1.			
HKBAK29	1062718	971	945 - 1562	3146	Glu-16 to Ser-23, Tyr-32 to Ala-44, Leu-56 to Ala-70, Ser-85 to Thr-91, Glu-102 to Lys-108, Glu-116 to Leu-122, Leu-136 to Leu-150, Glu-165 to Leu-170, Val-183 to Asp-191.	AR096: 7, AR104: 7, AR089: 5, AR033: 4, AR060: 4, AR053: 2, AR061: 1, AR055: 0, AR039: 0 S0358: 6, L0659: 6, L0805: 3, L0655: 3, L0665: 3, H0670: 3, L0755: 3, S0026: 3, S0360: 2, S0003: 2, L0649: 2, L0774: 2, L0776: 2, L0666: 2, L0663: 2, L0777: 2, L0758: 2, H0624: 1, H0170: 1, T0002: 1, H0656: 1, H0638: 1, H0637: 1, L0717: 1, S0278: 1, S0222: 1, H0497: 1, H0642: 1, H0574: 1, H0632: 1, H0486: 1, H0156: 1, L0021: 1, H0036: 1, H0251: 1, H0046: 1, L0157: 1, L0471: 1, H0083: 1, S0214: 1,			

						H0039: 1, H0644: 1, H0165: 1, H0674: 1, H0090: 1, H0040: 1, H0412: 1, H0413: 1, H0625: 1, H0529: 1, L0646: 1, L0768: 1, L0766: 1, L0803: 1, L0775: 1, L0784: 1, L0634: 1, L0783: 1, H0520: 1, S0126: 1, H0689: 1, H0683: 1, H0666: 1, H0648: 1, H0539: 1, H0521: 1, S0044: 1, S3014: 1, L0744: 1, L0756: 1, L0752: 1, L0757: 1, L0592: 1, L0485: 1, H0423: 1, H0422: 1 and H0506: 1.		
HPMCX26	1062743	972	329 - 682	3147	Ser-12 to Trp-23, Tyr-25 to Tyr-32, Pro-34 to Phe-41.	L0599: 2, H0271: 1, H0031: 1 and H0623: 1.			
HFKHF51	1062785	973	3 - 1910	3148		L0747: 4, H0620: 3, S0051: 3, H0424: 3, L0749: 3, L0756: 3, L0755: 3, H0295: 2, S0300: 2, H0333: 2, H0024: 2, H0100: 2, L0794: 2, L0774: 2, H0672: 2, L0744: 2,			

					L0754: 2, L0777: 2, L0731: 2, L0759: 2, S0412: 2, S0420: 1, S0222: 1, S0005: 1, S0049: 1, H0320: 1, S0250: 1, H0213: 1, H0417: 1, H0068: 1, L0564: 1, H0494: 1, L0771: 1, L0803: 1, L0775: 1, L0382: 1, L0809: 1, L0367: 1, L0787: 1, L0791: 1, L0793: 1, S0126: 1, H0690: 1, S0380: 1, L0612: 1, S3014: 1, L0779: 1, L0757: 1, S0260: 1, L0592: 1 and L0603: 1.		
HUCPE28	1062795	974	71 - 1090	3149	Lys-16 to Gly-23, Glu-33 to Val-43, Ser-55 to Ala-67, Gln-82 to Pro-97, Thr-108 to Gln-124, Pro-151 to Glu-157, Leu-184 to Cys-194, Ala-218 to Pro-225, Pro-227 to Asp-243, Lys-304 to Ser-324.	AR096: 1, AR055: 1, AR089: 1, AR061: 0, AR060: 0, AR033: 0, AR052: 0, AR104: 0 L0766: 11, H0622: 5, H0716: 2, S0420: 2, L0769: 2, L0803: 2, L0779: 2, H0656: 1, H0484: 1, S0418: 1, S0444: 1, H0580: 1, H0730: 1, H0619: 1, H0411: 1, H0592: 1,		

						H0427: 1, H0581: 1, H0052: 1, H0494: 1, L0774: 1, L0775: 1, L4501: 1, L0665: 1, S0374: 1, H0539: 1, S0404: 1, L0743: 1, L0745: 1, L0749: 1, L0777: 1, L0752: 1, S0436: 1 and L0097: 1.		
HPWAH30	1062840	975	1 - 708	3150	Phe-12 to Thr-19, Thr-26 to Cys-36, Thr-45 to Lys-50, Thr-54 to Gly-65, His-81 to Lys-88, Thr-110 to Lys-116, Phe-124 to Thr-131, Thr-138 to Lys-144, Ser-156 to Thr-162, His-165 to Lys-172, Asn-181 to Thr-187, Thr-194 to Lys-200, Thr-222 to Glu-230.	L0361: 2, H0170: 1, H0341: 1, H0663: 1, S0358: 1, S0045: 1, H0392: 1, H0586: 1, H0488: 1, H0509: 1, L0763: 1, L0665: 1, S0044: 1, L0779: 1 and L0593: 1.		
H6EDQ51	H6EDQ51R	976	91 - 303	3151				
HA5AU29	HA5AU29R	977	2 - 190	3152	Arg-1 to Cys-10.			
HACBX26	HACBX26R	978	2 - 124	3153				
HACMD23	HACMD23R	979	1 - 81	3154				
HACMF32	HACMF32R	980	52 - 342	3155				
HACMH54	HACMH54R	981	2 - 199	3156				
HACMH72	HACMH72R	982	2 - 478	3157		H0713: 5, H0684: 2,		

						H0685: 1, H0689: 1 and H0683: 1.		
HACMM26	HACMM26R	983	1 - 84	3158		H0685: 2, S0422: 1, L0766: 1 and L0526: 1.		
HACMM56	HACMM56R	984	221 - 451	3159				
HACMS55	HACMS55R	985	3 - 116	3160	Ser-9 to Phe-14.			
HACMX77	HACMX77R	986	3 - 419	3161	Glu-113 to Gly-118.	L0747: 25, S0358: 11, L0755: 9, L0740: 7, L0758: 7, L0775: 6, H0659: 6, L0742: 6, H0545: 5, S0406: 5, L0750: 5, L0756: 5, L0757: 5, L0362: 5, S0026: 5, H0580: 4, S0007: 4, H0413: 4, H0494: 4, S0440: 4, L0520: 4, L0769: 4, L0731: 4, H0543: 4, H0295: 3, H0341: 3, S0444: 3, H0581: 3, H0529: 3, L0770: 3, L0766: 3, L0382: 3, H0436: 3, L0744: 3, L0361: 3, H0686: 2, S0134: 2, S0218: 2, H0419: 2, H0484: 2, S0442: 2, S0360: 2, S0045: 2, H0486: 2, H0427: 2, L0021: 2, H0594: 2, T0023: 2,		

		H0063: 2, H0551: 2, H0560: 2, L0761: 2, L0773: 2, L0648: 2, L0521: 2, L0768: 2, L0653: 2, L0654: 2, L0776: 2, L0526: 2, S0374: 2, H0689: 2, H0670: 2, S0028: 2, S0206: 2, L0748: 2, L0439: 2, L0751: 2, L0754: 2, L0749: 2, L0752: 2, L0759: 2, H0445: 2, L0595: 2, H0171: 1, H0265: 1, H0685: 1, H0294: 1, H0657: 1, S0116: 1, S0212: 1, S0001: 1, H0192: 1, S0376: 1, H0676: 1, S0408: 1, H0431: 1, H0370: 1, H0392: 1, H0600: 1, H0586: 1, H0587: 1, H0643: 1, H0331: 1, H0632: 1, T0060: 1, T0082: 1, H0318: 1, S0049: 1, H0251: 1, H0309: 1, H0054: 1, H0327: 1, H0530: 1, H0544: 1, H0123: 1, H0050: 1, L0471: 1,				

		H0012: 1, H0620: 1, H0014: 1, H0373: 1, H0051: 1, H0510: 1, H0266: 1, S0022: 1, H0428: 1, H0169: 1, H0674: 1, S0036: 1, H0380: 1, H0412: 1, T0042: 1, L0475: 1, S0438: 1, H0509: 1, S0150: 1, H0647: 1, S0344: 1, S0210: 1, H0026: 1, L0506: 1, L0630: 1, L0646: 1, L0764: 1, L0771: 1, L0767: 1, L0522: 1, L0774: 1, L0375: 1, L0655: 1, L0661: 1, L0807: 1, L0657: 1, L0659: 1, L0384: 1, L0383: 1, L0519: 1, L0532: 1, L0666: 1, H0144: 1, T0068: 1, H0547: 1, H0519: 1, S0126: 1, H0682: 1, H0658: 1, S0378: 1, S0380: 1, H0525: 1, H0521: 1, H0522: 1, H0696: 1, H0555: 1, S0392: 1, H0478: 1, H0631: 1, S3012: 1,				

						L0779: 1, L0753: 1, S0434: 1, L0588: 1, L0485: 1, H0668: 1, H0653: 1, H0136: 1, S0196: 1, H0542: 1, H0422: 1 and H0008: 1.		
HACMZ45	HACMZ45R	987	3 - 245	3162	Thr-11 to Gly-16, Ser-49 to Ser-55, Ile-64 to Gly-69.			
HACND54	HACND54R	988	2 - 274	3163	Gln-1 to Lys-6.	H0617: 9, H0618: 4, H0253: 4, H0545: 4, L0774: 4, L0439: 4, L0750: 4, L0766: 3, L0803: 3, L0806: 3, L0748: 3, L0747: 3, L0777: 3, L0752: 3, L0758: 3, H0685: 2, H0333: 2, H0559: 2, H0100: 2, L0644: 2, L0542: 2, L0565: 2, L0438: 2, L0587: 2, S0040: 1, S0114: 1, H0589: 1, S0418: 1, S0420: 1, S0356: 1, S0376: 1, H0580: 1, H0351: 1, H0411: 1, S0278: 1, H0549: 1, S0222: 1, H0431: 1, H0438: 1, T0109: 1, H0427: 1, S0280: 1,		

HACND56	HACND56R	989	166 - 318	3164		L0021: 1, H0599: 1, H0318: 1, H0052: 1, H0544: 1, H0046: 1, H0024: 1, H0373: 1, H0051: 1, H0071: 1, T0010: 1, H0266: 1, H0615: 1, T0006: 1, H0604: 1, H0213: 1, H0553: 1, H0124: 1, H0087: 1, H0264: 1, H0412: 1, H0059: 1, H0561: 1, H0132: 1, H0647: 1, S0208: 1, L0598: 1, L0770: 1, L0769: 1, L0646: 1, L0642: 1, L0643: 1, L0764: 1, L0768: 1, L0375: 1, L0629: 1, L0783: 1, L0809: 1, L0789: 1, L0790: 1, L0666: 1, L0665: 1, H0547: 1, H0519: 1, H0658: 1, H0660: 1, H0651: 1, S0330: 1, S0380: 1, S0146: 1, S0406: 1, H0576: 1, H0478: 1, L0749: 1, L0780: 1, L0755: 1, S0192: 1 and H0352: 1.	H0457: 4, S0474: 3,	

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HACNE40	HACNE40R	990	229 - 426	3165				
HACNF21	HACNF21R	991	3 - 542	3166	Asp-30 to Thr-37, Lys-81 to Glu-87.			
HACNF41	HACNF41R	992	2 - 91	3167	Ile-13 to Gly-18.			
HACNI47	HACNI47R	993	39 - 500	3168	Val-23 to Lys-30, Tyr-40 to Asn-50, Lys-63 to Lys-68, Leu-92 to Asn-102.	AR089: 18, AR060: 15, AR104: 14, AR096: 9, AR055: 6, AR061: 4		
HACNI86	HACNI86R	994	239 - 370	3169		L0754: 12, L0740: 8, L0731: 8, S0003: 6, L0649: 6, H0620: 5, S0214: 5, L0766: 5,		

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HADDD29	HADDD29R	995	181 - 342	3170	Asn-14 to Thr-26.	H0539: 1, H0710: 1, S0152: 1, H0522: 1, H0696: 1, S0044: 1, S0406: 1, H0478: 1, L0756: 1, L0753: 1, S0031: 1, H0595: 1, S0434: 1, L0592: 1, S0011: 1, H0653: 1, S0192: 1, S0242: 1, H0542: 1, H0543: 1 and H0422: 1.		
HADET44	HADET44R	996	2 - 304	3171				
HAHGU75	HAHGU75R	997	1 - 501	3172				
HAHHD12	HAHHD12R	998	1 - 96	3173	Leu-3 to Met-9, Gln-24 to Thr-32.			
HALSG11	HALSG11R	999	2 - 364	3174	Ser-25 to Cys-36, Gln-39 to Asp-56.			
HANGA96	HANGA96R	1000	40 - 246	3175	Asn-49 to Asp-54.			
HAOSA43	HAOSA43R	1001	61 - 222	3176		L0759: 8, S0010: 7, L0742: 7, L0455: 6, S0007: 5, L0809: 4, L0439: 4, H0013: 3, L0768: 3, L0753: 3, H0686: 2, S0134: 2, S0222: 2, H0052: 2, H0024: 2, L0769: 2, L0638: 2, L0521: 2, L0794: 2, L0438: 2, L0589: 2, L0608: 2,		

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HAOSB87	HAOSB87R	1002	1 - 348	3177	Val-77 to Val-86.			
HAOSC40	HAOSC40R	1003	55 - 327	3178	Pro-69 to Leu-76.	L0766: 8, L0803: 7, L0731: 7, L0758: 5, S0358: 4, S0360: 4, L0794: 4, H0547: 4, S0440: 3, L0662: 3, L0659: 3, L0809: 3, L0666: 3, L0663: 3, S0374: 3, L0755: 3, L0596: 3, H0543: 3, H0583: 2, H0004: 2, H0622: 2, L0194: 2, H0038: 2, S0422: 2, L0771: 2, L0551: 2, L0774: 2, L0655: 2, L0526: 2, L0665: 2, H0659: 2, L0747: 2, L0750: 2, L0756: 2, S0436: 2, H0624: 1, H0170: 1, H0159: 1, H0686: 1, H0685: 1,		

HAOSE70	HAOSE70R	1004	85 - 273	3179		H0650: 1, H0657: 1, S0116: 1, H0341: 1, S0442: 1, S0376: 1, S0444: 1, H0619: 1, L0717: 1, H0411: 1, S0222: 1, H0587: 1, H0497: 1, H0427: 1, H0042: 1, H0596: 1, T0110: 1, H0081: 1, H0050: 1, H0687: 1, S0003: 1, H0252: 1, H0213: 1, H0163: 1, H0591: 1, H0634: 1, H0616: 1, H0063: 1, H0413: 1, H0100: 1, H0529: 1, L0638: 1, L0637: 1, L0800: 1, L0764: 1, L0773: 1, L0521: 1, L0768: 1, L0784: 1, L0783: 1, L0788: 1, L0790: 1, L0664: 1, H0436: 1, S0392: 1, H0627: 1, L0748: 1, L0754: 1, L0749: 1, L0759: 1, H0445: 1, S0434: 1, H0423: 1, S0412: 1 and S0424: 1.		
HAOSF68	HAOSF68R	1005	1 - 630	3180					

HAOSG95	HAOSG95R	1006	51 - 485	3181	Arg-5 to Arg-17, Asp-25 to Val-31.			
HAOSI79	HAOSI79R	1007	1 - 543	3182	Val-7 to Glu-13, Thr-20 to Arg-26, Lys-34 to Phe-40, Arg-46 to Lys-51.			
HAOSJ27	HAOSJ27R	1008	2 - 166	3183	Lys-27 to Gln-39, Gln-47 to Thr-52.			
HAOSJ33	HAOSJ33R	1009	3 - 353	3184	Leu-3 to Glu-14, Ser-95 to Ala-105.			
HAOSJ73	HAOSJ73R	1010	1 - 114	3185				
HAOSK38	HAOSK38R	1011	1 - 303	3186	Pro-24 to Val-49, Tyr-51 to Leu-56.	H0585: 27, H0556: 17, L0595: 15, L0591: 13, L0593: 13, H0046: 12, H0543: 12, H0521: 11, L0747: 11, L0596: 11, H0265: 10, H0040: 10, H0266: 9, H0038: 9, H0494: 9, L0588: 9, H0656: 8, H0581: 8, H0617: 8, L0664: 8, H0519: 8, L0601: 8, L0163: 7, H0083: 7, H0529: 7, L0665: 7, L0602: 7, H0657: 6, H0599: 6, H0618: 6, H0318: 6, H0551: 6, L0666: 6, H0547: 6, H0542: 6, H0141: 5, H0402: 5, S0358: 5,		

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HAOSL36	HAOSL36R	1012	3 - 269	3187	S0418: 10, L0749: 9, L0809: 7, S0406: 6, L0766: 5, L0748: 5, L0740: 5, L0752: 5, L0731: 5, S0360: 4, L0509: 4, L0665: 4, L0754: 4, S0424: 4, H0638: 3, S0420: 3, S0410: 3, H0013: 3, H0318: 3, H0545: 3, H0050: 3, H0040: 3, L0664: 3, H0658: 3, H0521: 3, L0750: 3, H0556: 2, H0341: 2, H0580: 2, S0222: 2, H0333: 2, L0471: 2, H0620: 2, H0687: 2, H0553: 2, H0673: 2, H0674: 2, H0068: 2, H0551: 2, H0494: 2, H0560: 2, S0438: 2, S0440: 2, H0509: 2, L0769: 2, L0638: 2,		

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HAOSL47	HAOSL47R	1013	2 - 409	3188	Thr-12 to Thr-17, Leu-31 to Met-36, Pro-97 to Lys-103, Gln-126 to Trp-136.	L0748: 23, S0358: 12, H0616: 10, L0750: 8, L0752: 8, L0596: 8, H0031: 7, H0494: 7,		

		L0731: 7, L0758: 7, H0556: 6, H0024: 6, L0770: 6, L0588: 6, S0360: 5, S0046: 5, S0476: 5, L0774: 5, H0547: 5, L0439: 5, L0740: 5, L0749: 5, L0755: 5, S0420: 4, S0250: 4, H0039: 4, H0135: 4, H0551: 4, L0766: 4, H0144: 4, S0126: 4, L0742: 4, L0743: 4, L0747: 4, L0757: 4, L0591: 4, H0170: 3, H0663: 3, S0444: 3, H0486: 3, H0200: 3, H0188: 3, H0038: 3, H0100: 3, L0769: 3, L0773: 3, L0775: 3, S0031: 3, H0445: 3, H0136: 3, H0542: 3, H0543: 3, H0624: 2, H0717: 2, S0212: 2, H0484: 2, H0255: 2, S0418: 2, S0408: 2, S0410: 2, H0393: 2, H0351: 2, H0411: 2, S0222: 2, H0592: 2, H0574: 2, H0635: 2, H0427: 2,			

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HAOSP50	HAOSP50R	1014	183 - 380	3189	Ser-53 to Pro-60.		

HAOSS30	HAOSS30R	1015	3 - 509	3190	Pro-11 to His-21, Glu-30 to Glu-41, Arg-55 to Ser-64, Arg-89 to Thr-96, Cys-99 to Gln-106, Pro-116 to His-124.	L0439: 16, S0222: 5, H0733: 4, L0770: 4, L0809: 4, L0747: 4, S0356: 3, L0471: 3, S0366: 3, L0766: 3, S0436: 3, H0556: 2, L0622: 2, H0373: 2, S6028: 2, H0266: 2, H0687: 2, H0617: 2, L0637: 2, L0803: 2, L0789: 2, H0518: 2, L0748: 2, S0434: 2, L0604: 2, H0686: 1, S0040: 1, H0583: 1, S0001: 1, S0420: 1, H0729: 1, H0722: 1, H0619: 1, H0333: 1, H0318: 1, H0007: 1, H0052: 1, H0009: 1, L0163: 1, H0051: 1, H0428: 1, H0181: 1, S0364: 1, H0708: 1, H0135: 1, H0413: 1, S0440: 1, L5575: 1, L0764: 1, L0375: 1, L0378: 1, L0652: 1, L0438: 1, S0126: 1, H0658: 1, H0539: 1, L0740: 1, L0749: 1, L0779: 1, L0752: 1 and		

HAOSU85	HAOSU85R	1016	2 - 508	3191	His-1 to Phe-7, Pro-16 to His-26, Asp-44 to Ser-52.	L0758: 1.	H0686: 2, L0362: 2, H0100: 1, H0646: 1 and L0766: 1.			
HAOSW92	HAOSW92R	1017	93 - 317	3192		L0777: 8, L0754: 6, L0662: 4, L0766: 4, S0136: 3, S0406: 2, L0744: 2, L0780: 2, L0752: 2, L0594: 2, H0556: 1, H0686: 1, S0418: 1, S0376: 1, S0360: 1, H0580: 1, H0587: 1, H0486: 1, S0280: 1, L0021: 1, L0105: 1, H0428: 1, L0055: 1, H0212: 1, H0040: 1, S0422: 1, L0639: 1, L5575: 1, L0772: 1, L0372: 1, L0764: 1, L0794: 1, L0522: 1, L0803: 1, L0659: 1, L0529: 1, L0665: 1, H0144: 1, H0547: 1, H0519: 1, H0684: 1, H0659: 1, H0670: 1, L0748: 1, L0756: 1, L0757: 1, L0758: 1, L0759: 1, L0596: 1, L0589: 1, L0605: 1, L0599: 1,			

							H0667: 1, H0542: 1 and H0506: 1.		
HAOTB47	HAOTB47R	1018	3 - 107	3193					
HAOTB58	HAOTB58R	1019	336 - 485	3194	Ile-3 to Asp-9.		L0756: 6, L0777: 6, S0408: 5, L0770: 5, H0547: 5, S0360: 4, L0665: 4, H0624: 3, H0687: 3, H0170: 2, H0686: 2, L0717: 2, H0497: 2, L0163: 2, L0794: 2, L0766: 2, S0126: 2, L0752: 2, L0731: 2, H0657: 1, H0656: 1, L0808: 1, H0341: 1, S0282: 1, S0442: 1, S0354: 1, S0045: 1, S0222: 1, H0486: 1, L0586: 1, H0156: 1, H0575: 1, H0318: 1, H0581: 1, H0052: 1, L0738: 1, H0266: 1, H0553: 1, H0169: 1, S0036: 1, H0087: 1, H0413: 1, S0422: 1, L0598: 1, L0520: 1, L0763: 1, L0638: 1, L0764: 1, L0803: 1, L0776: 1, L0658: 1, L0659: 1, L0809: 1, L0789: 1,		

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HAOTD32	HAOTD32R	1020	209 - 340	3195	L0747: 28, S0192: 21, L0659: 17, L0740: 12, L0757: 10, S0360: 9, H0545: 9, L0662: 9, L0775: 9, L0665: 9, L0439: 9, L0664: 8, S0358: 7, L0666: 7, L0750: 7, L0601: 7, L0777: 6, L0731: 6, L0471: 5, S0003: 5, H0038: 5, H0547: 5, S0206: 5, L0748: 5, L0756: 5, L0752: 5, L0758: 5, S0011: 5, S0026: 5, T0049: 4, L0717: 4, H0575: 4, H0012: 4, H0620: 4, H0083: 4, H0090: 4, L0770: 4, L0764: 4, L0794: 4, L0766: 4, L0804: 4, L0375: 4,		

		L0806: 4, L0754: 4, L0779: 4, L0596: 4, L0588: 4, L0581: 4, L0603: 4, H0556: 3, H0431: 3, H0370: 3, S0010: 3, H0596: 3, S0388: 3, T0023: 3, H0031: 3, H0264: 3, L0564: 3, S0372: 3, L0769: 3, L0667: 3, L0521: 3, L0768: 3, L0774: 3, L0657: 3, L0783: 3, L0809: 3, L0663: 3, S0126: 3, S0122: 3, H0682: 3, L0759: 3, L0591: 3, H0352: 3, L0353: 2, H0686: 2, S0040: 2, H0295: 2, H0650: 2, S0045: 2, S0046: 2, S0132: 2, H0549: 2, S0222: 2, H0427: 2, H0156: 2, H0263: 2, H0597: 2, H0546: 2, H0046: 2, H0050: 2, H0024: 2, T0010: 2, H0375: 2, H0266: 2, H0271: 2, H0030: 2, H0553: 2, H0644: 2, H0674: 2, H0135: 2,				

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		S0444: 1, H0676: 1, H0208: 1, H0619: 1, H0393: 1, S6022: 1, H0369: 1, H0550: 1, H0455: 1, H0587: 1, H0333: 1, H0331: 1, H0574: 1, H0559: 1, T0039: 1, H0013: 1, S0280: 1, H0097: 1, H0042: 1, T0082: 1, S0474: 1, H0581: 1, S0049: 1, H0251: 1, H0309: 1, H0235: 1, H0011: 1, H0051: 1, H0021: 1, H0510: 1, H0594: 1, S0334: 1, H0687: 1, S0250: 1, S0214: 1, H0119: 1, T0006: 1, H0628: 1, H0617: 1, L0055: 1, H0032: 1, H0169: 1, H0124: 1, H0598: 1, H0551: 1, T0067: 1, H0128: 1, L0475: 1, H0560: 1, H0561: 1, S0352: 1, S0438: 1, S0440: 1, H0132: 1, H0641: 1, H0647: 1, H0646: 1, S0344: 1, S0426: 1, L0598: 1,			

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HAOTE06	HAOTE06R	1021	2 - 472	3196	L0803: 9, L0794: 8, L0740: 5, L0748: 4, L0439: 4, L0747: 4, L0438: 3, L0779: 3, L0758: 3, H0553: 2, L0646: 2, L0800: 2, L0804: 2, L0809: 2,		

					L0665: 2, H0670: 2, L0755: 2, L0608: 2, S0026: 2, H0170: 1, H0686: 1, H0717: 1, H0656: 1, S0444: 1, H0580: 1, H0156: 1, H0178: 1, H0014: 1, H0252: 1, H0615: 1, H0674: 1, H0090: 1, H0063: 1, L0637: 1, L0372: 1, L0764: 1, L0765: 1, L0662: 1, L0766: 1, L0649: 1, L0650: 1, L0806: 1, L0653: 1, L0657: 1, L0659: 1, L0517: 1, L0529: 1, L5622: 1, L0789: 1, L0790: 1, L0663: 1, L0664: 1, H0144: 1, H0723: 1, S0126: 1, H0659: 1, S0378: 1, S0152: 1, L0741: 1, L0777: 1, S0434: 1, L0594: 1, L0595: 1 and H0667: 1.	
HAOTF84	HAOTF84R	1022	68 - 208	3197	Lys-15 to Gln-22.	L0757: 13, L0731: 10, L0754: 7, L0770: 4, S0360: 3, H0553: 3, H0551: 3, L0769: 3, L0662: 3, L0659: 3,	

		L0747: 3, L0779: 3, L0777: 3, L0755: 3, H0686: 2, S0420: 2, H0545: 2, L0471: 2, H0673: 2, L0598: 2, L0646: 2, L0794: 2, L0806: 2, H0520: 2, S0330: 2, H0436: 2, L0740: 2, L0751: 2, L0756: 2, L0599: 2, S0011: 2, S0242: 2, H0170: 1, L0002: 1, L0808: 1, S0418: 1, S0444: 1, L0717: 1, H0587: 1, H0497: 1, H0333: 1, H0632: 1, T0039: 1, H0013: 1, H0250: 1, L0021: 1, H0052: 1, S0051: 1, H0188: 1, S0003: 1, S0022: 1, S0214: 1, H0428: 1, H0031: 1, H0628: 1, S0438: 1, S0440: 1, H0647: 1, L0763: 1, L0764: 1, L0771: 1, L0648: 1, L0649: 1, L0651: 1, L0805: 1, L0652: 1, L0655: 1, L0606: 1, L0634: 1, L0542: 1,				

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HAOTF90	HAOTF90R	1023	3 - 176	3198		L0439: 5, S0026: 5, H0624: 4, H0413: 4, S0418: 3, H0580: 3, H0373: 3, H0038: 3, H0494: 3, H0144: 3, H0686: 2, S0358: 2, H0261: 2, S0222: 2, H0013: 2, H0581: 2, H0052: 2, H0545: 2, H0031: 2, H0529: 2, L0664: 2, S0027: 2, L0747: 2, L0777: 2, L0752: 2, L0755: 2,	

		H0170: 1, S6024: 1, S0134: 1, H0483: 1, H0664: 1, H0449: 1, H0458: 1, H0125: 1, L0005: 1, S0045: 1, S0132: 1, H0393: 1, H0497: 1, H0485: 1, H0486: 1, T0060: 1, H0575: 1, H0122: 1, H0036: 1, S0010: 1, H0505: 1, S0049: 1, H0196: 1, H0046: 1, H0569: 1, H0123: 1, L0471: 1, H0024: 1, T0010: 1, H0266: 1, S0312: 1, S0314: 1, S0003: 1, S0214: 1, H0622: 1, H0553: 1, H0674: 1, S0364: 1, S0036: 1, H0379: 1, H0100: 1, L0370: 1, T0042: 1, H0641: 1, H0646: 1, S0144: 1, S0426: 1, L0638: 1, L0773: 1, L0775: 1, L0378: 1, L0776: 1, L0666: 1, L0438: 1, H0547: 1, H0519: 1, H0435: 1, H0539: 1, H0518: 1, S0152: 1,			

						H0521: 1, H0631: 1, L0740: 1, L0759: 1, S0260: 1, H0445: 1, L0596: 1, L0581: 1, L0604: 1, L0594: 1, H0667: 1 and L0697: 1.		
HAOTG75	HAOTG75R	1024	2 - 328	3199	Glu-1 to Gln-8, Pro-31 to Trp-36.	L0747: 28, S0192: 21, L0659: 17, L0740: 12, L0757: 10, S0360: 9, H0545: 9, L0662: 9, L0775: 9, L0665: 9, L0439: 9, L0664: 8, S0358: 7, L0666: 7, L0750: 7, L0601: 7, L0777: 6, L0731: 6, L0471: 5, S0003: 5, H0038: 5, H0547: 5, S0206: 5, L0748: 5, L0756: 5, L0752: 5, L0758: 5, S0011: 5, S0026: 5, T0049: 4, L0717: 4, H0575: 4, H0012: 4, H0620: 4, H0083: 4, H0090: 4, L0770: 4, L0764: 4, L0794: 4, L0766: 4, L0804: 4, L0375: 4, L0806: 4, L0754: 4, L0779: 4, L0596: 4, L0588: 4, L0581: 4,		

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		H0369: 1, H0550: 1, H0455: 1, H0587: 1, H0333: 1, H0331: 1, H0574: 1, H0559: 1, T0039: 1, H0013: 1, S0280: 1, H0097: 1, H0042: 1, T0082: 1, S0474: 1, H0581: 1, S0049: 1, H0251: 1, H0309: 1, H0235: 1, H0011: 1, H0051: 1, H0021: 1, H0510: 1, H0594: 1, S0334: 1, H0687: 1, S0250: 1, S0214: 1, H0119: 1, T0006: 1, H0628: 1, H0617: 1, L0055: 1, H0032: 1, H0169: 1, H0124: 1, H0598: 1, H0551: 1, T0067: 1, H0128: 1, L0475: 1, H0560: 1, H0561: 1, S0352: 1, S0438: 1, S0440: 1, H0132: 1, H0641: 1, H0647: 1, H0646: 1, S0344: 1, S0426: 1, L0598: 1, H0529: 1, L0762: 1, L0646: 1, L0800: 1, L0771: 1, L0773: 1,			

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HAOTH28	HAOTH28R	1025	33 - 164	3200				
HAOTI07	HAOTI07R	1026	3 - 398	3201	Pro-1 to Arg-6, Met-12 to Ser-21.			
HAOTT79	HAOTT79R	1027	3 - 392	3202				
HAOTU79	HAOTU79R	1028	15 - 455	3203				
HAOTW22	HAOTW22R	1029	1 - 201	3204	Ser-35 to Ser-41, Ile-50 to Gly-55.			
HAOTW30	HAOTW30R	1030	376 - 564	3205	Arg-1 to Gly-7.			
HAOTW65	HAOTW65R	1031	113 - 475	3206		H0686: 2 and S0358: 1.		

HAPNK45	HAPNK45R	1032	68 - 232	3207				
HAPPR43	HAPPR43R	1033	200 - 313	3208	Lys-1 to Ser-6, Ala-26 to Thr-31.			
HAPQO14	HAPQO14R	1034	5 - 193	3209	Ser-1 to Pro-11.			
HAQML40	HAQML40R	1035	1 - 258	3210				
HASME85	HASME85R	1036	208 - 396	3211				
HAUAK54	HAUAK54R	1037	3 - 299	3212				
HAVMB46	HAVMB46R	1038	84 - 203	3213	Ser-13 to Arg-19, Ile-28 to Asn-33.			
HAVMW69	HAVMW69R	1039	3 - 116	3214		L0439: 2, L0755: 2, S0412: 2, H0170: 1, H0497: 1, H0591: 1, H0038: 1, L0641: 1, L0774: 1, L0651: 1, L0776: 1, L4501: 1, L0666: 1, L0663: 1, H0144: 1, L0438: 1, S0126: 1, H0659: 1, H0648: 1, L0602: 1, L0748: 1, L0749: 1, L0750: 1, L0756: 1, L0752: 1, L0759: 1, L0599: 1 and L0362: 1.		
HAVNQ92	HAVNQ92R A	1040	1 - 165	3215	Ala-19 to Arg-24.			
HAVOJ11	HAVOJ11R	1041	108 - 239	3216	Gly-1 to Thr-12, Glu-23 to Lys-38.			
HAZAC68	HAZAC68R	1042	3 - 587	3217	Ser-119 to Lys-124.			
HAZAD13	HAZAD13R	1043	2 - 517	3218	Lys-32 to Arg-40,			

					Ser-54 to Gly-59, Glu-133 to Ala-147, Gln-153 to Gln-164.			
HAZAD40	HAZAD40R	1044	191 - 445	3219	Val-9 to Gly-24.	S0360: 1, H0486: 1, L0761: 1, L0803: 1, L0774: 1, L0666: 1, L0663: 1, L0665: 1, H0520: 1, H0690: 1, H0435: 1 and L0747: 1.		
HAZAE44	HAZAE44R	1045	3 - 512	3220				
HAZAG23	HAZAG23R	1046	2 - 466	3221	Gln-12 to Thr-20, Cys-39 to Asn-45, Thr-60 to Gly-66, Lys-99 to Asp-106, Asp-119 to Pro-127.	H0424: 16, S0380: 13, L0748: 13, L0750: 12, S0440: 10, S0444: 9, L0755: 9, L0758: 9, S0192: 9, H0484: 8, S0358: 8, H0545: 8, L0809: 8, L0747: 8, L0749: 8, S0360: 7, S0410: 7, S0406: 7, L0752: 7, L0766: 6, S0374: 6, L0751: 6, L0754: 6, H0423: 6, S0442: 5, H0672: 5, S0378: 5, S0404: 5, L0759: 5, H0556: 4, S0356: 4, S0376: 4, H0546: 4, H0150: 4, S0438: 4, L0775: 4, L0776: 4, L0518: 4, S0328: 4, L0740: 4,		

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		H0156: 1, H0575: 1, H0004: 1, H0274: 1, H0253: 1, T0048: 1, S0474: 1, H0085: 1, H0596: 1, H0544: 1, H0086: 1, H0123: 1, L0471: 1, H0012: 1, H0620: 1, H0057: 1, T0010: 1, H0375: 1, H0594: 1, H0179: 1, H0188: 1, H0687: 1, H0284: 1, H0252: 1, T0023: 1, S0368: 1, T0006: 1, H0604: 1, H0213: 1, H0553: 1, L0055: 1, H0032: 1, H0673: 1, H0674: 1, S0366: 1, S0036: 1, H0163: 1, H0038: 1, H0634: 1, H0087: 1, T0067: 1, H0264: 1, T0041: 1, H0625: 1, H0561: 1, S0466: 1, H0131: 1, S0150: 1, H0633: 1, S0472: 1, H0529: 1, L0762: 1, L0763: 1, L0770: 1, L3905: 1, L0761: 1, L0772: 1, L0372: 1, L0646: 1, L0374: 1,				

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HAZAG92	HAZAG92R	1047	282 - 467	3222	Pro-48 to Gly-59.		
HAZAH79	HAZAH79R	1048	138 - 515	3223	Gly-2 to Ser-9, Pro-46 to Cys-60, Pro-62 to His-69, Pro-81 to Thr-91, Ala-96 to Ser-101.		
HAZAI23	HAZAI23R	1049	1 - 165	3224	Lys-11 to Ser-16, Arg-20 to Glu-28.	L0747: 21, L0748: 18, L0750: 15, S0408: 11, L0771: 10, L0775: 9,	

		L0742: 8, S0410: 6, L0756: 6, L0752: 6, L0758: 6, L0731: 5, H0341: 4, L0766: 4, L0803: 4, L0776: 4, S0126: 4, H0170: 3, H0486: 3, S0346: 3, H0204: 3, H0545: 3, L0471: 3, S0440: 3, L0769: 3, L0772: 3, L0804: 3, H0214: 3, S0404: 3, L0744: 3, L0754: 3, L0757: 3, H0506: 3, H0171: 2, H0685: 2, S0420: 2, S0356: 2, S0358: 2, S0045: 2, H0587: 2, H0069: 2, L0021: 2, H0575: 2, T0048: 2, H0318: 2, H0581: 2, H0597: 2, H0009: 2, H0014: 2, H0510: 2, H0622: 2, H0031: 2, S0364: 2, H0591: 2, H0056: 2, H0494: 2, S0438: 2, L0770: 2, L0761: 2, L0521: 2, L0649: 2, L0650: 2, L0526: 2, L0792: 2, L0666: 2, L0665: 2,				

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HAZAI87	HAZAI87R	1050	264 - 428	3225	Phe-34 to Lys-41.	L0659: 6, L0662: 5, S0212: 4, S0003: 4, H0551: 4, S0192: 4,		

		S0376: 3, S0440: 3, S0374: 3, H0521: 3, S0040: 2, S0418: 2, S0444: 2, H0580: 2, H0486: 2, H0575: 2, L0471: 2, H0024: 2, H0553: 2, L0637: 2, S0126: 2, S0406: 2, S0028: 2, L0748: 2, L0754: 2, L0757: 2, S0434: 2, L0590: 2, S0242: 2, H0686: 1, H0685: 1, H0664: 1, S0420: 1, L0005: 1, S0360: 1, S0408: 1, S0045: 1, S0476: 1, S0278: 1, H0357: 1, H0586: 1, T0039: 1, H0635: 1, H0427: 1, L0022: 1, H0004: 1, H0505: 1, S0049: 1, H0251: 1, H0263: 1, T0003: 1, H0373: 1, H0051: 1, H0356: 1, H0622: 1, H0644: 1, H0090: 1, H0412: 1, H0623: 1, H0560: 1, H0641: 1, H0633: 1, S0142: 1, S0208: 1, L0773: 1, L0521: 1,		

					L0649: 1, L0803: 1, L0775: 1, L0528: 1, L0663: 1, L0664: 1, H0144: 1, L0565: 1, H0693: 1, H0520: 1, H0547: 1, H0689: 1, H0690: 1, H0435: 1, H0659: 1, H0658: 1, H0670: 1, H0660: 1, S0152: 1, H0555: 1, H0436: 1, S0432: 1, S0390: 1, S3014: 1, L0439: 1, L0758: 1, L0686: 1, S0436: 1, L0588: 1, S0196: 1, L0698: 1 and H0293: 1.		
HAZAI89	HAZAI89R	1051	3 - 260	3226	Ser-54 to Ser-60, Ile-69 to Gly-74.			
HAZAJ72	HAZAJ72R	1052	1 - 612	3227	Ala-17 to Asp-36, Thr-56 to Met-61.	S0420: 2, H0575: 2, S0418: 1, L0005: 1, S0356: 1, H0619: 1, H0097: 1, H0581: 1, H0012: 1, H0373: 1, H0266: 1, S0250: 1, T0042: 1, H0625: 1, H0561: 1, S0438: 1, S0150: 1, H0641: 1, S0210: 1, H0693: 1, H0519: 1, H0690: 1, L0748: 1 and H0653: 1.		

HAZAQ80	HAZAQ80R	1053	27 - 389	3228	Thr-41 to Lys-46, Thr-53 to Gly-59, Ala-77 to Asp-84.			
HAZAW22	HAZAW22R	1054	2 - 172	3229	Ser-1 to Leu-14, Glu-39 to Thr-47.	L0748: 31, L0747: 18, L0752: 17, L0758: 17, L0777: 15, L0766: 13, H0014: 9, L0776: 9, L0751: 9, L0740: 7, L0779: 7, L0754: 6, H0040: 5, L0769: 5, S0330: 5, L0439: 5, L0756: 5, L0599: 5, S0356: 4, H0587: 4, H0622: 4, L0783: 4, L0744: 4, L0745: 4, L0749: 4, L0755: 4, S0031: 4, H0624: 3, S0222: 3, H0156: 3, S0010: 3, S0049: 3, S0051: 3, S0003: 3, H0591: 3, H0038: 3, L0763: 3, L0770: 3, L0662: 3, L0551: 3, L0803: 3, L0664: 3, H0144: 3, H0547: 3, H0521: 3, L0757: 3, L0759: 3, L0596: 3, L0608: 3, L0595: 3, S0114: 2, S0116: 2, H0341: 2, S0418: 2,		

		S0360: 2, H0619: 2, H0393: 2, H0013: 2, H0575: 2, H0318: 2, H0581: 2, H0051: 2, S0388: 2, H0428: 2, T0006: 2, H0673: 2, H0169: 2, H0674: 2, S0036: 2, H0616: 2, H0551: 2, H0268: 2, L0625: 2, L0768: 2, L0649: 2, L0775: 2, L0806: 2, L0805: 2, H0539: 2, L0731: 2, S0260: 2, H0445: 2, S0434: 2, L0605: 2, L0594: 2, H0543: 2, H0170: 1, H0171: 1, H0716: 1, S6024: 1, S0134: 1, S0218: 1, H0583: 1, H0650: 1, H0657: 1, L0785: 1, S0212: 1, S0282: 1, S0035: 1, S0030: 1, H0305: 1, H0638: 1, S0348: 1, S0420: 1, L0005: 1, S0442: 1, H0340: 1, S0476: 1, H0645: 1, S0300: 1, H0411: 1, S0278: 1, H0549: 1, H0431: 1,			

		H0409: 1, H0331: 1, H0574: 1, H0486: 1, S0346: 1, H0421: 1, H0052: 1, H0251: 1, L0032: 1, H0085: 1, H0545: 1, H0457: 1, L0041: 1, H0050: 1, H0024: 1, H0373: 1, S6028: 1, S0250: 1, H0615: 1, H0688: 1, H0039: 1, S0364: 1, H0361: 1, L0455: 1, H0376: 1, H0135: 1, H0090: 1, H0634: 1, T0004: 1, T0042: 1, S0014: 1, H0560: 1, H0625: 1, S0438: 1, H0509: 1, H0646: 1, H0529: 1, L0637: 1, L5575: 1, L0667: 1, L0646: 1, L0764: 1, L0771: 1, L5574: 1, L0774: 1, L0655: 1, L0527: 1, L0657: 1, L0659: 1, L0809: 1, L0789: 1, L0792: 1, L0793: 1, L0663: 1, L0665: 1, S0053: 1, H0520: 1, H0519: 1, S0126: 1, H0711: 1,			

					H0690: 1, H0660: 1, S0136: 1, H0522: 1, S0406: 1, H0555: 1, S3012: 1, S0027: 1, S0028: 1, L0743: 1, L0750: 1, L0604: 1, L0361: 1, S0026: 1, H0653: 1, S0192: 1, S0196: 1, H0542: 1, H0423: 1, S0412: 1 and S0424: 1.		
HAZBH84	HAZBH84R	1055	225 - 359	3230	S0003: 154, S0214: 41, H0545: 38, L0651: 34, H0546: 17, L0747: 15, L0757: 14, L0731: 10, L0659: 7, L0776: 6, L0749: 6, H0544: 5, S0122: 5, H0365: 5, L0740: 5, S0360: 4, L0771: 4, L0662: 4, L0768: 4, H0150: 3, H0169: 3, L0750: 3, L0779: 3, H0661: 2, S0376: 2, H0163: 2, S0144: 2, L0764: 2, L0766: 2, L0649: 2, L0775: 2, L0653: 2, L0666: 2, S0126: 2, L0754: 2, L0759: 2, H0171: 1, H0419: 1,		

					H0411: 1, H0357: 1, H0486: 1, L0021: 1, H0309: 1, H0231: 1, L0738: 1, H0099: 1, H0364: 1, H0039: 1, S0366: 1, H0038: 1, S0142: 1, S0002: 1, L0762: 1, L0640: 1, L0763: 1, L0637: 1, L0646: 1, L0773: 1, L0523: 1, L0655: 1, L0379: 1, L0783: 1, L0663: 1, L0664: 1, L0565: 1, S0008: 1, H0690: 1, S0328: 1, H0696: 1, L0755: 1, L0758: 1, H0595: 1 and H0506: 1.	
HAZBI39	HAZBI39R	1056	56 - 424	3231	Ser-29 to Ile-39, Gly-42 to Trp-48, Lys-82 to Val-92.	L0758: 3, H0068: 2, L0749: 2, L0756: 2, L0731: 2, S0026: 2, H0136: 2, S0040: 1, L0005: 1, H0351: 1, H0318: 1, H0052: 1, H0530: 1, H0266: 1, S0003: 1, H0412: 1, T0004: 1, T0042: 1, S0422: 1, H0529: 1, H0517: 1, L0762: 1, L0770: 1,	

						L0769: 1, L0766: 1, L0775: 1, L0809: 1, H0698: 1, H0690: 1, S0390: 1, S0028: 1, L0742: 1, L0748: 1, L0747: 1, L0779: 1, L0752: 1, L0755: 1, L0759: 1, S0308: 1, H0542: 1, H0543: 1 and H0423: 1.		
HAZBJ69	HAZBJ69R	1057	3 - 323	3232	Gly-1 to Pro-6, Lys-58 to Asn-71.			
HBAGS73	HBAGS73R	1058	207 - 371	3233	Pro-15 to Thr-22, Lys-28 to Arg-35.			
HBBBE13	HBBBE13R	1059	2 - 199	3234				
HBCPI58	HBCPI58RA	1060	3 - 245	3235				
HBJAC26	HBJAC26R	1061	267 - 446	3236		L0665: 3, H0318: 2, L0659: 2, S0330: 2, L0439: 2, L0599: 2, H0583: 1, H0038: 1, L0761: 1, L0771: 1, L0387: 1, L0655: 1, L0666: 1, L0779: 1, L0777: 1, L0758: 1 and L0608: 1.		
HBJFS85	HBJFS85R	1062	94 - 261	3237	Asn-30 to Ile-35.			
HBJHY72	HBJHY72RP 00B	1063	1 - 297	3238	Gly-1 to Pro-38, Leu-45 to Gly-64.	AR052: 12, AR055: 8, AR053: 8, AR033: 6, AR089: 6, AR061: 6, AR060: 5, AR096: 3,		

		AR104: 1, AR039: 0 L0794: 5, L0766: 3, L0759: 3, S0212: 2, H0318: 2, L0803: 2, L0804: 2, L0378: 2, L0665: 2, L0438: 2, L0439: 2, L0749: 2, L0591: 2, L0599: 2, L0362: 2, H0686: 1, S0342: 1, S0134: 1, H0656: 1, H0669: 1, S0358: 1, H0370: 1, H0069: 1, S0346: 1, H0251: 1, H0050: 1, H0373: 1, H0266: 1, S0022: 1, L0483: 1, H0553: 1, H0163: 1, H0090: 1, H0116: 1, H0509: 1, S0426: 1, H0529: 1, L0769: 1, L0638: 1, L0646: 1, L0648: 1, L0768: 1, L0381: 1, L0375: 1, L0653: 1, L0659: 1, L0782: 1, L0809: 1, L0793: 1, H0691: 1, H0435: 1, H0659: 1, H0648: 1, S0152: 1, S0390: 1, S0027: 1, S0028: 1, L0777: 1,			

HBJMN13	HBJMN13R	1064	145 - 231	3239	Glu-8 to Asn-13, Arg-16 to Thr-29.	L0731: 1, S0260: 1, L0596: 1, S0192: 1 and S0424: 1.			
HBXCG52	HBXCG52R	1065	59 - 547	3240	Lys-23 to Lys-32, Ser-72 to Leu-80, Ser-90 to Gly-95, Leu-98 to His-103, Ser-106 to Gly-113, Ile-121 to Phe-128.	S0280: 1 and S0038: 1.			
HBXFO08	HBXFO08R	1066	1 - 126	3241	Leu-2 to Val-10.				
HCACS53	HCACS53RP 00A	1067	145 - 543	3242	His-2 to Glu-28, Ala-37 to Gly-45, His-54 to Pro-62, Glu-69 to Thr-77.				
HCHAJ85	HCHAJ85R	1068	171 - 359	3243	Arg-1 to Arg-6, Phe-27 to Arg-32.				
HCHMM71	HCHMM71R	1069	2 - 322	3244		H0651: 9, L0601: 5, H0559: 4, H0494: 4, L0646: 3, H0484: 2, H0255: 2, S0358: 2, H0550: 2, H0309: 2, H0014: 2, H0188: 2, H0617: 2, H0646: 2, L0769: 2, L0644: 2, L0806: 2, H0689: 2, L0750: 2, L0603: 2, H0624: 1, H0171: 1, H0657: 1, H0663: 1,			

						S0360: 1, H0574: 1, H0257: 1, H0013: 1, H0635: 1, H0098: 1, H0253: 1, H0327: 1, H0545: 1, H0024: 1, H0181: 1, H0359: 1, S0150: 1, L0369: 1, L0771: 1, L0662: 1, L0766: 1, L0803: 1, L0661: 1, S0428: 1, H0670: 1, S0328: 1, L0748: 1, L0439: 1, L0758: 1 and H0543: 1.		
HCHMW20	HCHMW20R	1070	53 - 319	3245	Ser-1 to Thr-8, Glu-17 to Ala-32, Arg-39 to Trp-47.			
HCLBH21	HCLBH21R	1071	3 - 134	3246				
HCNDT49	HCNDT49R	1072	234 - 443	3247	Gln-17 to Pro-27.	L0439: 8, H0052: 7, L0748: 7, S0440: 5, L0758: 5, H0046: 4, H0038: 4, L0769: 4, S0442: 3, H0013: 3, H0253: 3, T0010: 3, L0774: 3, L0776: 3, H0144: 3, H0521: 3, S0404: 3, L0752: 3, L0731: 3, H0656: 2, S0358: 2, S0360: 2, S0222: 2, H0618: 2, H0620: 2, L0351: 2,		

		S0422: 2, L0764: 2, L0771: 2, L0783: 2, L0793: 2, H0658: 2, H0666: 2, L0751: 2, L0754: 2, L0745: 2, L0747: 2, L0750: 2, H0624: 1, H0265: 1, H0556: 1, H0686: 1, S0134: 1, S0212: 1, S0001: 1, H0254: 1, H0661: 1, S0354: 1, S0444: 1, S0408: 1, S0300: 1, S0278: 1, H0369: 1, H0370: 1, H0333: 1, H0574: 1, H0486: 1, H0036: 1, H0263: 1, H0597: 1, H0545: 1, H0572: 1, H0024: 1, S0388: 1, S0051: 1, S0250: 1, H0252: 1, H0428: 1, H0039: 1, H0644: 1, L0055: 1, H0674: 1, H0135: 1, H0087: 1, T0067: 1, H0488: 1, H0529: 1, L0763: 1, L0770: 1, L0761: 1, L0374: 1, L0662: 1, L0768: 1, L0766: 1, L0803: 1, L0775: 1,			

					L0805: 1, L0653: 1, L0526: 1, L5622: 1, L0666: 1, L0664: 1, L0665: 1, S0053: 1, H0547: 1, H0682: 1, H0435: 1, H0670: 1, H0660: 1, H0648: 1, H0672: 1, S0328: 1, H0539: 1, S0152: 1, H0696: 1, S0044: 1, S0406: 1, H0631: 1, S3014: 1, S0028: 1, L0742: 1, L0749: 1, L0759: 1, S0436: 1, S0011: 1, S0192: 1, H0542: 1, H0423: 1, S0398: 1 and H0506: 1.	
HCOMA72	HCOMA72R	1073	25 - 273	3248	Arg-1 to Leu-10, Ser-32 to Ala-45, Ala-58 to Gly-68.		
HCOMB04	HCOMB04R	1074	32 - 754	3249	Tyr-3 to Gly-10, Glu-19 to Trp-25.	L0747: 15, L0750: 7, L0731: 7, L0588: 6, L0748: 5, L0439: 5, L0759: 5, H0150: 3, S0144: 3, L0666: 3, L0665: 3, L0752: 3, L0758: 3, L0591: 3, S6024: 2, T0049: 2, S0356: 2, H0674: 2, H0413: 2, S0142: 2,	

		L0770: 2, L0769: 2, L0774: 2, L0775: 2, L0657: 2, H0672: 2, S0328: 2, S0378: 2, L0605: 2, L0593: 2, H0624: 1, T0002: 1, H0638: 1, S0418: 1, L0005: 1, S0376: 1, S0444: 1, S0360: 1, H0675: 1, S0045: 1, H0393: 1, S0222: 1, H0441: 1, H0453: 1, H0333: 1, H0574: 1, H0486: 1, H0101: 1, L0021: 1, H0098: 1, T0010: 1, H0083: 1, H0266: 1, H0188: 1, S0003: 1, H0328: 1, H0615: 1, H0428: 1, T0006: 1, H0166: 1, H0598: 1, H0090: 1, H0063: 1, T0069: 1, H0509: 1, H0641: 1, S0002: 1, L0369: 1, L0372: 1, L0662: 1, L0794: 1, L0766: 1, L0803: 1, L0651: 1, L0655: 1, L0379: 1, L0656: 1, L0659: 1, L0782: 1, L0783: 1,			

							L0788: 1, L0664: 1, L0565: 1, L0438: 1, H0547: 1, S0126: 1, H0435: 1, H0659: 1, H0658: 1, H0670: 1, H0522: 1, H0696: 1, L0740: 1, L0751: 1, L0745: 1, L0755: 1, L0757: 1, H0445: 1, H0343: 1, H0595: 1, L0596: 1, L0581: 1, L0599: 1 and S0192: 1.		
HCOMD38	HCOMD38R	1075	3 - 275	3250	Pro-1 to Pro-9, Ile-43 to Lys-48.				
HCOMD61	HCOMD61R	1076	1 - 315	3251					
HCOMF10	HCOMF10R	1077	350 - 622	3252	Asn-10 to Val-16.		L0740: 6, L0666: 2, H0547: 2, L0751: 2, L0777: 2, H0483: 1, S0358: 1, S0444: 1, H0038: 1, L0770: 1, L0768: 1, L0774: 1, L0805: 1, L0658: 1, L0789: 1, H0520: 1, H0659: 1, H0670: 1, L0747: 1, L0779: 1 and L0758: 1.		
HCOMF52	HCOMF52R	1078	2 - 523	3253	Lys-11 to Thr-16, Arg-18 to Glu-24, Arg-31 to Leu-38, Phe-51 to Glu-56,		L0439: 7, L0748: 5, H0255: 4, H0253: 4, H0012: 3, H0620: 3, H0617: 3, L0783: 3,		

					Glu-59 to Glu-67, Thr-102 to Thr-114, Leu-119 to Gln-124.	L0438: 3, H0618: 2, H0046: 2, L0769: 2, L0766: 2, L0532: 2, L0663: 2, H0521: 2, L0750: 2, L0777: 2, L0592: 2, H0543: 2, H0650: 1, S0212: 1, S0001: 1, H0483: 1, H0254: 1, H0638: 1, S0418: 1, S0358: 1, H0580: 1, S0468: 1, H0549: 1, H0559: 1, H0013: 1, S0280: 1, H0318: 1, H0052: 1, H0024: 1, H0252: 1, H0424: 1, H0553: 1, H0644: 1, H0124: 1, H0376: 1, H0135: 1, H0040: 1, H0087: 1, H0488: 1, T0042: 1, H0494: 1, H0509: 1, L0768: 1, L0388: 1, L0657: 1, L0659: 1, L0789: 1, L0352: 1, S0126: 1, H0689: 1, H0658: 1, H0670: 1, H0436: 1, H0478: 1, H0626: 1, L0742: 1, L0780: 1, L0731: 1, H0445: 1, L0608: 1,		

HCOMG28	HCOMG28R	1079	46 - 357	3254	Lys-1 to Arg-8, Asp-20 to Thr-26, Gly-35 to Glu-48, Leu-66 to Arg-72, Phe-83 to Tyr-88.	L0366: 1 and S0276: 1.			
HCOMG40	HCOMG40R	1080	29 - 373	3255	Trp-13 to Asp-19, Cys-29 to Gln-34, Ala-41 to Arg-52, Gly-54 to Gln-59, Arg-69 to Tyr-83.				
HCOMG82	HCOMG82R	1081	233 - 436	3256					
HCOMH70	HCOMH70R	1082	21 - 167	3257	Pro-13 to Pro-22.	H0670: 14, S0360: 9, L0657: 5, L0659: 4, L0809: 4, H0696: 4, L0777: 4, S0356: 3, L0764: 3, L0662: 3, S0374: 3, H0637: 2, H0411: 2, H0486: 2, L0762: 2, L0763: 2, L0521: 2, L0768: 2, L0774: 2, L0805: 2, L0666: 2, L0665: 2, H0659: 2, H0672: 2, H0710: 2, S0406: 2, L0744: 2, L0748: 2, H0686: 1, S0040: 1, H0713: 1, H0657: 1, H0662: 1, S0444: 1, S0408: 1, S0410: 1,			

HCOMI30	HCOMI30R	1083	42 - 497	3258		H0602: 1, H0643: 1, T0048: 1, H0263: 1, H0596: 1, H0014: 1, H0015: 1, H0594: 1, H0271: 1, H0687: 1, S0003: 1, S0214: 1, H0169: 1, H0674: 1, S0450: 1, H0649: 1, L0640: 1, L0646: 1, L0641: 1, L0773: 1, L0648: 1, L0388: 1, L0784: 1, L0806: 1, L0776: 1, L0655: 1, L0519: 1, L0530: 1, H0547: 1, H0689: 1, H0435: 1, H0648: 1, S0328: 1, S0330: 1, H0555: 1, H0627: 1, S0390: 1, S0028: 1, L0751: 1, L0779: 1, L0731: 1, S0434: 1, L0581: 1, L0362: 1 and H0667: 1.		
HCOMI37	HCOMI37R	1084	244 - 618	3259					
HCOML11	HCOML11R	1085	255 - 605	3260	Lys-1 to Gly-10, Pro-13 to Asn-23.				
HCOMM12	HCOMM12R	1086	138 - 338	3261		L0743: 19, L0731: 13, L0744: 12, L0748: 11, L0666: 9, L0751: 9,			

		L0664: 8, H0144: 8, H0333: 7, H0617: 7, L0769: 7, L0662: 7, S0022: 6, H0616: 6, H0087: 6, L0483: 5, H0181: 5, L0517: 5, L0519: 5, L0754: 5, H0677: 5, S0051: 4, S0344: 4, L0663: 4, H0658: 4, L0747: 4, L0750: 4, L0757: 4, H0295: 3, T0049: 3, H0255: 3, L0622: 3, T0039: 3, H0253: 3, H0545: 3, L0163: 3, H0594: 3, H0188: 3, H0673: 3, H0100: 3, S0142: 3, L0372: 3, L0775: 3, L0776: 3, L0657: 3, L0382: 3, L0665: 3, H0672: 3, S0027: 3, L0742: 3, L0752: 3, S0260: 3, H0445: 3, L0596: 3, L0588: 3, L0599: 3, S0420: 2, H0637: 2, S0045: 2, S0132: 2, S0300: 2, S0278: 2, S0222: 2, H0431: 2, H0392: 2, H0599: 2,		

		H0575: 2, H0052: 2, H0309: 2, H0085: 2, H0597: 2, H0544: 2, H0428: 2, H0124: 2, S0036: 2, H0163: 2, H0038: 2, H0413: 2, H0529: 2, L0369: 2, L0763: 2, L0770: 2, L0638: 2, L0764: 2, L0771: 2, L0803: 2, L0804: 2, L0375: 2, L0655: 2, L0384: 2, L0809: 2, L0532: 2, S0374: 2, S0126: 2, H0670: 2, H0651: 2, H0521: 2, S0028: 2, L0740: 2, L0485: 2, L0362: 2, L0601: 2, S0192: 2, S0424: 2, L0600: 2, H0556: 1, T0002: 1, H0686: 1, S0040: 1, S0342: 1, H0294: 1, S0114: 1, S0134: 1, H0650: 1, H0657: 1, L0785: 1, H0341: 1, S0180: 1, S0212: 1, H0484: 1, H0483: 1, H0254: 1, H0671: 1, H0662: 1, H0402: 1, H0638: 1,				

		S0418: 1, S0356: 1, T0007: 1, S0358: 1, S0007: 1, H0208: 1, H0441: 1, H0438: 1, H0587: 1, S0005: 1, L0623: 1, L0477: 1, T0114: 1, S0280: 1, L0021: 1, H0590: 1, H0004: 1, H0618: 1, S0010: 1, H0318: 1, S0049: 1, H0251: 1, H0596: 1, T0110: 1, H0327: 1, H0009: 1, H0123: 1, L0471: 1, H0006: 1, H0014: 1, H0051: 1, S0388: 1, H0510: 1, S0334: 1, H0687: 1, T0023: 1, T0006: 1, H0424: 1, H0182: 1, H0606: 1, H0383: 1, H0165: 1, H0166: 1, S0366: 1, H0135: 1, H0090: 1, T0067: 1, H0488: 1, H0412: 1, T0069: 1, S0112: 1, L0564: 1, H0494: 1, S0015: 1, H0561: 1, L0762: 1, L0640: 1, L0637: 1, L0761: 1, L0667: 1,			

		L0772: 1, L0373: 1, L0646: 1, L0643: 1, L0374: 1, L0765: 1, L0773: 1, L0648: 1, L0521: 1, L0768: 1, L0364: 1, L0533: 1, L0650: 1, L0774: 1, L0376: 1, L0806: 1, L0652: 1, L0653: 1, L0606: 1, L0629: 1, L0659: 1, L0636: 1, L0542: 1, L0526: 1, L0518: 1, L0782: 1, L0783: 1, H0689: 1, H0690: 1, H0682: 1, H0683: 1, H0659: 1, H0660: 1, S0328: 1, S0330: 1, S0380: 1, H0522: 1, S0004: 1, H0555: 1, L0611: 1, S3014: 1, S0206: 1, L0755: 1, L0758: 1, H0444: 1, L0587: 1, L0589: 1, L0605: 1, L0591: 1, L0608: 1, L0361: 1, L0366: 1, H0665: 1, S0242: 1, S0194: 1, H0543: 1, H0423: 1, S0460: 1, S0456: 1 and H0506: 1.			

HCOMM55	HCOMM55R	1087	298 - 119	3262	Pro-10 to Leu-20, His-27 to Lys-40.				
HCOMO58	HCOMO58R	1088	1 - 336	3263	Phe-7 to Asp-29, Glu-31 to Lys-38, Thr-46 to Thr-52, Glu-65 to Arg-72.				
HCOMW52	HCOMW52R P00B	1089	3 - 443	3264					
HCOMX77	HCOMX77R	1090	166 - 492	3265					
HCONC18	HCONC18RP 00B	1091	3 - 161	3266					
HCONH28	HCONH28R	1092	76 - 267	3267		L0754: 3, H0624: 2, S0354: 2, H0124: 2, L0766: 2, L0751: 2, L0759: 2, S0116: 1, H0661: 1, H0098: 1, H0597: 1, L0157: 1, S0250: 1, S0003: 1, H0622: 1, H0553: 1, H0509: 1, L0521: 1, L0662: 1, L0768: 1, L0803: 1, L0657: 1, L0659: 1, L0666: 1, L0663: 1, H0144: 1, S0126: 1, H0670: 1, L0779: 1, L0777: 1, L0755: 1, L0589: 1 and L0362: 1.			
HCONK56	HCONK56R	1093	8 - 718	3268					
HCONK75	HCONK75R	1094	33 - 398	3269					

HCONL49	HCONL49R	1095	3 - 221	3270	His-23 to Lys-34, Arg-49 to Leu-57, Pro-59 to Ser-66.			
HCONL59	HCONL59R	1096	255 - 455	3271		L0748: 50, L0754: 42, L0731: 31, H0644: 30, L0747: 29, H0551: 22, S0418: 21, L0659: 17, H0619: 15, L0663: 14, L0666: 13, S0360: 10, H0622: 10, H0031: 10, H0553: 10, L0662: 10, S0126: 10, L0757: 10, L0603: 10, S0420: 8, H0486: 8, H0013: 8, H0050: 8, H0623: 8, L0717: 7, H0144: 7, L0770: 6, L0750: 6, H0427: 5, H0024: 5, H0328: 5, H0030: 5, L0773: 5, L0665: 5, L0749: 5, H0713: 4, T0039: 4, S0280: 4, H0012: 4, H0038: 4, L0794: 4, L0774: 4, L0775: 4, L0805: 4, H0624: 3, H0170: 3, H0171: 3, S0356: 3, H0329: 3, S0046: 3, H0331: 3, H0575: 3, L0471: 3, H0620: 3,		

		S0250: 3, H0032: 3, H0591: 3, L0598: 3, L0803: 3, L0653: 3, L0657: 3, H0670: 3, S0406: 3, H0555: 3, L0780: 3, L0605: 3, H0667: 3, H0717: 2, T0049: 2, S0212: 2, H0661: 2, S0376: 2, S0007: 2, H0208: 2, S0476: 2, H0645: 2, H0411: 2, H0437: 2, H0550: 2, H0586: 2, H0333: 2, H0599: 2, H0042: 2, H0545: 2, H0123: 2, H0105: 2, H0014: 2, H0051: 2, H0375: 2, L0142: 2, H0598: 2, H0135: 2, H0040: 2, S0372: 2, L0520: 2, L0640: 2, L0769: 2, L5566: 2, L0772: 2, L0646: 2, L0771: 2, L0363: 2, L0768: 2, L0375: 2, L0654: 2, L0776: 2, L0809: 2, L0438: 2, H0547: 2, H0519: 2, L0602: 2, L0743: 2, L0744: 2, L0439: 2,				

		L0758: 2, L0759: 2, L0588: 2, L0599: 2, L0361: 2, H0716: 1, H0294: 1, S0430: 1, S0298: 1, S0132: 1, H0351: 1, H0369: 1, S0222: 1, H0370: 1, H0392: 1, H0409: 1, H0587: 1, H0574: 1, H0485: 1, T0040: 1, T0060: 1, H0244: 1, L0021: 1, H0003: 1, H0036: 1, H0274: 1, H0253: 1, H0505: 1, H0251: 1, H0544: 1, H0546: 1, H0046: 1, H0081: 1, H0019: 1, T0003: 1, H0057: 1, H0015: 1, H0373: 1, H0275: 1, H0594: 1, S0003: 1, H0039: 1, H0111: 1, H0674: 1, S0364: 1, S0036: 1, H0090: 1, H0063: 1, H0087: 1, H0268: 1, H0412: 1, H0059: 1, H0100: 1, L0564: 1, H0561: 1, S0210: 1, L0369: 1, L3904: 1, L0800: 1, L0641: 1,		

					L0764: 1, L5564: 1, L0804: 1, L0378: 1, L0806: 1, L0807: 1, L0526: 1, L0787: 1, L0788: 1, L0791: 1, L0793: 1, S0374: 1, H0691: 1, T0068: 1, H0690: 1, H0682: 1, H0684: 1, H0658: 1, H0672: 1, H0651: 1, H0518: 1, H0696: 1, S0146: 1, S0037: 1, S3014: 1, S0027: 1, S0028: 1, S0206: 1, S0032: 1, H0445: 1, L0589: 1, L0590: 1, L0485: 1, L0604: 1, H0668: 1, H0653: 1, S0242: 1, S0194: 1 and H0008: 1.		
HCONL67	HCONL67R	1097	389 - 631	3272	Leu-2 to Leu-9.	L0748: 50, L0754: 42, L0731: 31, H0644: 30, L0747: 29, H0551: 22, S0418: 21, L0659: 17, H0619: 15, L0663: 14, L0666: 13, S0360: 10, H0622: 10, H0031: 10, H0553: 10, L0662: 10, S0126: 10, L0757: 10, L0603: 10, S0420: 8,	

		H0486: 8, H0013: 8, H0050: 8, H0623: 8, L0717: 7, H0144: 7, L0770: 6, L0750: 6, H0427: 5, H0024: 5, H0328: 5, H0030: 5, L0773: 5, L0665: 5, L0749: 5, H0713: 4, T0039: 4, S0280: 4, H0012: 4, H0038: 4, L0794: 4, L0774: 4, L0775: 4, L0805: 4, H0624: 3, H0170: 3, H0171: 3, S0356: 3, H0329: 3, S0046: 3, H0331: 3, H0575: 3, L0471: 3, H0620: 3, S0250: 3, H0032: 3, H0591: 3, L0598: 3, L0803: 3, L0653: 3, L0657: 3, H0670: 3, S0406: 3, H0555: 3, L0780: 3, L0605: 3, H0667: 3, H0717: 2, T0049: 2, S0212: 2, H0661: 2, S0376: 2, S0007: 2, H0208: 2, S0476: 2, H0645: 2, H0411: 2, H0437: 2, H0550: 2, H0586: 2,			

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		H0253: 1, H0505: 1, H0251: 1, H0544: 1, H0546: 1, H0046: 1, H0081: 1, H0019: 1, T0003: 1, H0057: 1, H0015: 1, H0373: 1, H0275: 1, H0594: 1, S0003: 1, H0039: 1, H0111: 1, H0674: 1, S0364: 1, S0036: 1, H0090: 1, H0063: 1, H0087: 1, H0268: 1, H0412: 1, H0059: 1, H0100: 1, L0564: 1, H0561: 1, S0210: 1, L0369: 1, L3904: 1, L0800: 1, L0641: 1, L0764: 1, L5564: 1, L0804: 1, L0378: 1, L0806: 1, L0807: 1, L0526: 1, L0787: 1, L0788: 1, L0791: 1, L0793: 1, S0374: 1, H0691: 1, T0068: 1, H0690: 1, H0682: 1, H0684: 1, H0658: 1, H0672: 1, H0651: 1, H0518: 1, H0696: 1, S0146: 1, S0037: 1, S3014: 1, S0027: 1,			

						S0028: 1, S0206: 1, S0032: 1, H0445: 1, L0589: 1, L0590: 1, L0485: 1, L0604: 1, H0668: 1, H0653: 1, S0242: 1, S0194: 1 and H0008: 1.		
HCONN92	HCONN92R	1098	205 - 384	3273				
HCONO17	HCONO17R	1099	1 - 135	3274				
HCONO25	HCONO25R	1100	218 - 610	3275		L0803: 15, L0766: 7, L0748: 6, L0809: 5, L0749: 5, L0804: 4, L0776: 4, L0754: 4, L0752: 4, L0805: 3, L0755: 3, S0438: 2, L0800: 2, L0662: 2, L0740: 2, L0751: 2, L0747: 2, L0750: 2, L0757: 2, L0615: 1, H0556: 1, S0278: 1, T0039: 1, H0318: 1, H0597: 1, H0009: 1, H0510: 1, H0553: 1, H0063: 1, H0509: 1, H0647: 1, S0144: 1, L0763: 1, L0770: 1, L0764: 1, L0768: 1, L0794: 1, L0775: 1, L0653: 1, L0661: 1, L0518: 1, L0790: 1,		

HCONP44	HCONP44R	1101	3 - 413	3276	Val-1 to Ile-10, Met-32 to Asn-42.	H0519: 1, H0659: 1, H0670: 1, S0328: 1, H0696: 1, L0439: 1, L0581: 1, S0242: 1 and S0276: 1.		
HCONQ67	HCONQ67R	1102	1 - 669	3277	Gly-7 to Gly-21, Pro-145 to Arg-152, Ala-178 to Lys-183.			
HCONQ71	HCONQ71R	1103	312 - 488	3278				
HCONR31	HCONR31R	1104	3 - 380	3279	Gly-18 to Gln-39, Leu-49 to His-60, Glu-67 to Asp-92.			
HCONU03	HCONU03R	1105	3 - 575	3280				
HCONW62	HCONW62R	1106	1 - 429	3281	Thr-76 to Arg-92, Pro-113 to Ala-118.			
HCONW74	HCONW74R	1107	85 - 234	3282	Pro-15 to Tyr-21.			
HCONW90	HCONW90R	1108	2 - 151	3283	Asn-1 to Pro-10.			
HCONW95	HCONW95R	1109	44 - 457	3284				
HCOOB60	HCOOB60R	1110	101 - 352	3285				
HCOOG32	HCOOG32R	1111	2 - 334	3286				
HCOOG37	HCOOG37R	1112	3 - 482	3287				
HCOOH93	HCOOH93R	1113	1 - 426	3288				
HCOOI71	HCOOI71R	1114	1 - 354	3289	Ala-15 to Gln-25, Gly-42 to Asp-51, Gln-82 to Lys-87, Lys-113 to Lys-118.			
HCOOI79	HCOOI79R	1115	209 - 625	3290				

HCOOM18	HCOOM18R	1116	2 - 694	3291	Lys-71 to Glu-76, Ala-95 to Asp-100, Asp-113 to Ser-134.			
HCOOM73	HCOOM73R	1-117	2 - 661	3292	Leu-33 to Lys-39.	H0012: 5, H0620: 4, H0622: 4, L0803: 4, H0670: 4, L0751: 4, L0770: 3, S6024: 2, S0222: 2, L0791: 2, L0731: 2, H0549: 1, H0438: 1, T0023: 1, H0477: 1, H0647: 1, L0648: 1, L0774: 1, L0659: 1, L0664: 1, L0665: 1, H0659: 1, H0658: 1, H0648: 1, H0651: 1, S0380: 1, L0748: 1, L0439: 1, L0756: 1, L0779: 1 and L0755: 1.		
HCOOQ46	HCOOQ46R	1118	2 - 166	3293				
HCOOS39	HCOOS39R	1119	2 - 229	3294				
HCOOT43	HCOOT43R	1120	2 - 439	3295		L0743: 19, L0731: 13, L0744: 12, L0748: 11, L0666: 9, L0751: 9, L0664: 8, H0144: 8, H0333: 7, H0617: 7, L0769: 7, L0662: 7, S0022: 6, H0616: 6, H0087: 6, L0483: 5, H0181: 5, L0517: 5,		

		L0519: 5, L0754: 5, H0677: 5, S0051: 4, S0344: 4, L0663: 4, H0658: 4, L0747: 4, L0750: 4, L0757: 4, H0295: 3, T0049: 3, H0255: 3, L0622: 3, T0039: 3, H0253: 3, H0545: 3, L0163: 3, H0594: 3, H0188: 3, H0673: 3, H0100: 3, S0142: 3, L0372: 3, L0775: 3, L0776: 3, L0657: 3, L0382: 3, L0665: 3, H0672: 3, S0027: 3, L0742: 3, L0752: 3, S0260: 3, H0445: 3, L0596: 3, L0588: 3, L0599: 3, S0420: 2, H0637: 2, S0045: 2, S0132: 2, S0300: 2, S0278: 2, S0222: 2, H0431: 2, H0392: 2, H0599: 2, H0575: 2, H0052: 2, H0309: 2, H0085: 2, H0597: 2, H0544: 2, H0428: 2, H0124: 2, S0036: 2, H0163: 2, H0038: 2, H0413: 2,				

		H0529: 2, L0369: 2, L0763: 2, L0770: 2, L0638: 2, L0764: 2, L0771: 2, L0803: 2, L0804: 2, L0375: 2, L0655: 2, L0384: 2, L0809: 2, L0532: 2, S0374: 2, S0126: 2, H0670: 2, H0651: 2, H0521: 2, S0028: 2, L0740: 2, L0485: 2, L0362: 2, L0601: 2, S0192: 2, S0424: 2, L0600: 2, H0556: 1, T0002: 1, H0686: 1, S0040: 1, S0342: 1, H0294: 1, S0114: 1, S0134: 1, H0650: 1, H0657: 1, L0785: 1, H0341: 1, S0180: 1, S0212: 1, H0484: 1, H0483: 1, H0254: 1, H0671: 1, H0662: 1, H0402: 1, H0638: 1, S0418: 1, S0356: 1, T0007: 1, S0358: 1, S0007: 1, H0208: 1, H0441: 1, H0438: 1, H0587: 1, S0005: 1, L0623: 1, L0477: 1,				

		T0114: 1, S0280: 1, L0021: 1, H0590: 1, H0004: 1, H0618: 1, S0010: 1, H0318: 1, S0049: 1, H0251: 1, H0596: 1, T0110: 1, H0327: 1, H0009: 1, H0123: 1, L0471: 1, H0006: 1, H0014: 1, H0051: 1, S0388: 1, H0510: 1, S0334: 1, H0687: 1, T0023: 1, T0006: 1, H0424: 1, H0182: 1, H0606: 1, H0383: 1, H0165: 1, H0166: 1, S0366: 1, H0135: 1, H0090: 1, T0067: 1, H0488: 1, H0412: 1, T0069: 1, S0112: 1, L0564: 1, H0494: 1, S0015: 1, H0561: 1, L0762: 1, L0640: 1, L0637: 1, L0761: 1, L0667: 1, L0772: 1, L0373: 1, L0646: 1, L0643: 1, L0374: 1, L0765: 1, L0773: 1, L0648: 1, L0521: 1, L0768: 1, L0364: 1, L0533: 1,			

						L0650: 1, L0774: 1, L0376: 1, L0806: 1, L0652: 1, L0653: 1, L0606: 1, L0629: 1, L0659: 1, L0636: 1, L0542: 1, L0526: 1, L0518: 1, L0782: 1, L0783: 1, H0689: 1, H0690: 1, H0682: 1, H0683: 1, H0659: 1, H0660: 1, S0328: 1, S0330: 1, S0380: 1, H0522: 1, S0004: 1, H0555: 1, L0611: 1, S3014: 1, S0206: 1, L0755: 1, L0758: 1, H0444: 1, L0587: 1, L0589: 1, L0605: 1, L0591: 1, L0608: 1, L0361: 1, L0366: 1, H0665: 1, S0242: 1, S0194: 1, H0543: 1, H0423: 1, S0460: 1, S0456: 1 and H0506: 1.		
HCOOT68	HCOOT68R	1121	147 - 488	3296	Arg-13 to Val-20.	L0748: 20, H0251: 11, L0771: 11, L0740: 11, L0731: 11, L0757: 11, L0752: 10, S0126: 8, H0144: 7, L0596: 6, H0013: 5, L0665: 5,		

		L0747: 5, H0542: 5, H0423: 5, H0624: 4, T0002: 4, H0486: 4, H0031: 4, H0169: 4, H0616: 4, L0770: 4, L0776: 4, L0666: 4, S0152: 4, L0754: 4, H0657: 3, H0663: 3, S0418: 3, S0358: 3, S0360: 3, H0038: 3, L0764: 3, L0648: 3, L0775: 3, L0655: 3, L0749: 3, L0750: 3, L0755: 3, S0026: 3, H0422: 3, H0170: 2, H0171: 2, H0341: 2, H0402: 2, H0638: 2, S0045: 2, S0046: 2, H0156: 2, S0182: 2, H0318: 2, L0471: 2, S0003: 2, H0168: 2, H0674: 2, H0090: 2, H0063: 2, H0412: 2, H0413: 2, H0100: 2, S0440: 2, L0769: 2, L0372: 2, L0662: 2, L0659: 2, H0547: 2, H0659: 2, S0328: 2, S0380: 2, H0521: 2, L0756: 2, L0758: 2,				

		L0759: 2, H0445: 2, L0605: 2, L0604: 2, L0595: 2, L0362: 2, S0194: 2, H0543: 2, S0040: 1, S0134: 1, H0583: 1, H0656: 1, S0116: 1, H0484: 1, H0177: 1, S0420: 1, L0005: 1, S0354: 1, S0408: 1, L0717: 1, H0369: 1, H0550: 1, S0222: 1, H0574: 1, H0632: 1, T0060: 1, H0250: 1, H0108: 1, H0575: 1, H0037: 1, T0048: 1, H0309: 1, H0596: 1, T0115: 1, H0597: 1, H0327: 1, H0046: 1, S0051: 1, H0083: 1, H0061: 1, S6028: 1, H0288: 1, H0292: 1, H0039: 1, H0553: 1, H0644: 1, H0111: 1, H0032: 1, H0383: 1, H0316: 1, H0598: 1, H0087: 1, H0059: 1, T0042: 1, H0560: 1, S0438: 1, H0509: 1, H0132: 1, H0641: 1, H0633: 1,		

						S0210: 1, H0529: 1, L0520: 1, L0763: 1, L0637: 1, L0800: 1, L0765: 1, L0773: 1, L0521: 1, L0768: 1, L0364: 1, L0766: 1, L0806: 1, L0653: 1, L0657: 1, L0518: 1, L0783: 1, L0383: 1, L0663: 1, L0664: 1, H0593: 1, H0689: 1, H0682: 1, H0670: 1, H0666: 1, H0648: 1, H0672: 1, L0355: 1, H0522: 1, S0013: 1, H0696: 1, H0134: 1, H0214: 1, S0406: 1, L0609: 1, S3014: 1, S0206: 1, L0744: 1, L0751: 1, H0343: 1, L0591: 1, L0601: 1, S0242: 1, L0697: 1, S0424: 1 and S0446: 1.		
HCOOU56	HCOOU56R	1122	3 - 257	3297				
HCOOW72	HCOOW72R	1123	58 - 534	3298	Ala-20 to Asp-25, Asp-38 to Ser-59, Asn-103 to Glu-109, Pro-111 to Ser-119.			
HCOOX01	HCOOX01RA	1124	153 - 311	3299				

HCOOX07	HCOOX07R	1125	236 - 367	3300	His-15 to Gly-29.	L0751: 14, L0659: 11, H0695: 10, L0666: 10, L0757: 9, L0743: 8, L0779: 8, H0581: 6, L0769: 6, L0748: 6, L0758: 6, H0556: 5, H0402: 5, S0360: 5, H0014: 5, H0271: 5, L0761: 5, L0667: 5, L0774: 5, L0653: 5, S0406: 5, H0436: 5, S0358: 4, S0132: 4, L0763: 4, L0776: 4, L0809: 4, L0664: 4, S0126: 4, L0731: 4, S0280: 3, H0150: 3, H0687: 3, L0662: 3, L0775: 3, L0375: 3, H0670: 3, L0749: 3, S0434: 3, H0295: 2, H0650: 2, S0408: 2, H0580: 2, H0411: 2, H0586: 2, H0559: 2, H0545: 2, H0050: 2, S0051: 2, H0083: 2, H0416: 2, H0688: 2, H0617: 2, H0063: 2, H0551: 2, S0344: 2, L0643: 2, L0764: 2, L0766: 2, L0649: 2,		

		L0806: 2, L0657: 2, L0647: 2, L0793: 2, L0665: 2, S0428: 2, S0332: 2, L0747: 2, L0752: 2, H0624: 1, H0171: 1, H0265: 1, H0159: 1, H0713: 1, S0218: 1, H0656: 1, S0116: 1, H0483: 1, H0663: 1, H0638: 1, S0356: 1, S0444: 1, H0339: 1, S0046: 1, S0476: 1, S0278: 1, S6022: 1, H0550: 1, S0414: 1, L0622: 1, H0486: 1, H0635: 1, H0427: 1, H0156: 1, H0599: 1, H0052: 1, H0309: 1, H0597: 1, H0546: 1, L0041: 1, H0123: 1, H0510: 1, H0188: 1, T0006: 1, L0055: 1, H0673: 1, H0674: 1, H0708: 1, H0316: 1, H0634: 1, H0087: 1, H0059: 1, S0352: 1, S0448: 1, S0306: 1, L0640: 1, L0371: 1, L0770: 1, L0638: 1, L5565: 1,			

HCOOX48	HCOOX48R	1126	203 - 349	3301	Leu-13 to Gly-21, Ser-27 to Ser-42.	L0646: 1, L0642: 1, L0645: 1, L0771: 1, L0773: 1, L0648: 1, L0794: 1, L0805: 1, L0652: 1, L0661: 1, L0493: 1, L0635: 1, L0384: 1, L0788: 1, L0663: 1, S0052: 1, S0216: 1, S0374: 1, T0068: 1, H0689: 1, H0682: 1, H0659: 1, H0666: 1, H0672: 1, S0330: 1, H0539: 1, H0710: 1, H0521: 1, H0522: 1, H0696: 1, S0190: 1, S0404: 1, H0555: 1, L0744: 1, L0740: 1, L0756: 1, L0777: 1, L0759: 1, S0031: 1, H0595: 1, L0581: 1, L0361: 1 and S0194: 1.			
HCOOY43	HCOOY43R	1127	1 - 315	3302	Asn-67 to Arg-73, Thr-96 to Gly-102.				
HCOPA60	HCOPA60RA	1128	3 - 446	3303	Ala-1 to Leu-7, Gly-14 to Arg-19, Tyr-34 to Asp-41.	L0748: 4, L0747: 4, L0779: 4, H0620: 3, L0770: 3, L0774: 3, L0622: 2, S0280: 2,			

						H0271: 2, H0290: 2, L0769: 2, L0800: 2, L0794: 2, L0766: 2, L0775: 2, H0547: 2, S0126: 2, S0380: 2, L0752: 2, L0758: 2, L0596: 2, H0295: 1, S0212: 1, H0125: 1, H0559: 1, T0060: 1, T0082: 1, H0150: 1, N0006: 1, H0024: 1, S0022: 1, H0688: 1, H0428: 1, T0023: 1, H0033: 1, H0424: 1, H0213: 1, H0412: 1, H0413: 1, H0633: 1, S0344: 1, L0646: 1, L0768: 1, L0804: 1, L0656: 1, L0783: 1, L0809: 1, L0788: 1, L0666: 1, L0663: 1, L0438: 1, H0670: 1, H0660: 1, H0522: 1, S0037: 1, L0439: 1, L0750: 1, L0759: 1, S0031: 1 and S0196: 1.		
HCOPB03	HCOPB03R	1129	2 - 598	3304	Asp-28 to Glu-34, Ala-38 to Ile-44, Ala-64 to Arg-77, Gly-82 to Ala-88.			

HCOPC45	HCOPC45R	1130	3 - 89	3305				
HCOPD67	HCOPD67R	1131	26 - 541	3306	Phe-1 to Gly-7.			
HCOPE27	HCOPE27R	1132	2 - 400	3307	Arg-37 to Gly-44, Asp-76 to Gly-87.	L0751: 16, L0601: 10, L0659: 4, H0670: 4, L0665: 3, S0376: 2, H0494: 2, L0758: 2, L0596: 2, H0587: 1, H0646: 1, L0372: 1, L0646: 1, L0662: 1, L0552: 1, L0376: 1, L0806: 1, L0664: 1, H0682: 1, H0435: 1, H0672: 1 and L0744: 1.		
HCOPH51	HCOPH51RA	1133	243 - 398	3308				
HCOPI09	HCOPI09RA	1134	2 - 328	3309				
HCOPM42	HCOPM42R	1135	1 - 90	3310				
HCOPO34	HCOPO34R	1136	140 - 361	3311	Thr-6 to Cys-16, Tyr-40 to Lys-47, Ser-61 to Gln-66.			
HCOPO36	HCOPO36R	1137	143 - 601	3312	Arg-1 to Ser-7, Ser-25 to Phe-32, Leu-39 to Ser-44, Arg-58 to Gly-63, Ser-140 to Thr-145.	L0665: 3, H0682: 2, H0435: 2, L0751: 2, H0663: 1, L0021: 1, H0647: 1, L0806: 1, L0664: 1, H0683: 1, H0670: 1 and H0660: 1.		
HCOPO88	HCOPO88R	1138	1 - 267	3313	Pro-7 to Phe-15, Gly-26 to Arg-31, Asp-35 to Glu-43.			
HCOPV41	HCOPV41R	1139	3 - 620	3314	Arg-4 to Lys-9,			

HCOPZ15	HCOPZ15R	1140	1 - 582	3315	Asp-61 to Asn-67, Thr-69 to Lys-75, Leu-105 to Ala-112, Gly-126 to His-134, Gly-172 to Glu-179, Pro-186 to Asn-199.	AR096: 11, AR061: 10, AR104: 5, AR060: 5, AR089: 5, AR055: 4 L0774: 3, S0358: 2, H0509: 2, L0809: 2, H0670: 2, L0745: 2, L0779: 2, L0752: 2, H0449: 1, T0048: 1, H0355: 1, H0428: 1, H0617: 1, S0438: 1, H0529: 1, L0770: 1, L0761: 1, L0773: 1, L0803: 1, L0804: 1, L0375: 1, L0659: 1, L0382: 1, L0791: 1, S0328: 1, H0134: 1, L0743: 1, L0748: 1, L0747: 1 and L0756: 1.		
HCOQA38	HCOQA38R	1141	41 - 271	3316	His-39 to Asn-45, Cys-68 to Cys-75.			
HCOQA80	HCOQA80R	1142	1 - 192	3317	His-37 to Asp-42.			
HCOQB12	HCOQB12R	1143	1 - 582	3318	Lys-6 to Asp-11, Gly-22 to Phe-27,			

HCOQB56	HCOQB56R	1144	1 - 66	3319		His-54 to Gly-63, Asp-73 to Lys-79.	H0670: 2 and H0589: 1.		
HCOQB58	HCOQB58R	1145	281 - 466	3320	Lys-1 to Gln-7.				
HCOQC71	HCOQC71R	1146	3 - 248	3321	Lys-1 to Asp-21, Lys-61 to Leu-71.		L0794: 7, L0803: 5, L0809: 5, L0666: 5, L0751: 5, L0759: 3, H0674: 2, L0768: 2, L0774: 2, L0663: 2, L0779: 2, L0758: 2, S0360: 1, H0455: 1, H0618: 1, H0263: 1, H0169: 1, H0616: 1, H0059: 1, S0112: 1, L0451: 1, L0770: 1, L0639: 1, L0648: 1, L0804: 1, L0776: 1, L0783: 1, L0789: 1, L0790: 1, L0791: 1, L0664: 1, L0665: 1, H0670: 1, H0672: 1 and L0608: 1.		
HCOQD29	HCOQD29R	1147	1 - 570	3322	Glu-66 to Arg-72, Pro-148 to Ser-154.				
HCOQD38	HCOQD38R	1148	106 - 639	3323	Met-3 to Ser-16, Cys-25 to Asp-35, Glu-42 to Lys-52, Ser-55 to Glu-63, Glu-74 to Thr-79,				

HCOQD49	HCOQD49R	1149	8 - 196	3324	Ile-81 to Ser-102, Ser-109 to Glu-118, Thr-138 to Glu-158.	Asp-39 to Ser-46.	S0358: 15, S0003: 13, S0126: 11, L0754: 11, S0410: 10, H0599: 9, S0440: 9, H0529: 9, L0748: 9, H0341: 8, H0373: 8, H0591: 8, L0588: 8, L0362: 8, H0661: 7, S0007: 7, L0471: 7, L0731: 7, H0170: 6, T0042: 6, S0374: 6, H0624: 5, S0408: 5, H0013: 5, H0046: 5, H0031: 5, H0551: 5, H0144: 5, L0752: 5, H0657: 4, S0346: 4, S0214: 4, H0039: 4, H0644: 4, H0616: 4, H0413: 4, H0494: 4, H0670: 4, S0404: 4, S3014: 4, L0740: 4, L0747: 4, L0750: 4, L0753: 4, L0758: 4, L0581: 4, S0424: 4, S0040: 3, H0663: 3, H0638: 3, S0356: 3, S0360: 3, S0222: 3, H0497: 3,		

		H0575: 3, H0036: 3, S0010: 3, H0052: 3, S0438: 3, H0547: 3, S0328: 3, S0380: 3, S0206: 3, L0439: 3, L0757: 3, L0595: 3, H0423: 3, S0114: 2, S0116: 2, S0212: 2, H0484: 2, H0125: 2, S0418: 2, S0376: 2, S0444: 2, H0580: 2, H0393: 2, H0369: 2, H0370: 2, H0409: 2, H0331: 2, H0574: 2, H0486: 2, H0156: 2, H0042: 2, H0318: 2, H0581: 2, H0196: 2, H0012: 2, L0163: 2, H0083: 2, H0266: 2, H0328: 2, H0615: 2, L0194: 2, L0483: 2, H0673: 2, H0169: 2, S0364: 2, H0316: 2, H0598: 2, S0036: 2, H0090: 2, T0067: 2, S0150: 2, S0344: 2, S0422: 2, S0002: 2, L0762: 2, L0774: 2, L0666: 2, L0438: 2, H0659: 2, H0539: 2,				

		S0152: 2, H0521: 2, H0696: 2, S3012: 2, L0749: 2, L0756: 2, S0434: 2, L0593: 2, L0594: 2, L0366: 2, H0653: 2, H0543: 2, H0506: 2, H0171: 1, H0685: 1, H0716: 1, T0049: 1, S0134: 1, S0218: 1, H0583: 1, H0254: 1, H0255: 1, H0671: 1, H0664: 1, H0305: 1, L0005: 1, S0468: 1, H0208: 1, S0045: 1, S0046: 1, S6026: 1, H0351: 1, H0411: 1, H0261: 1, H0431: 1, H0455: 1, H0586: 1, H0632: 1, T0039: 1, L0586: 1, H0098: 1, H0120: 1, T0048: 1, S0182: 1, S0049: 1, H0230: 1, H0596: 1, T0115: 1, H0546: 1, H0545: 1, H0009: 1, H0178: 1, H0572: 1, H0123: 1, H0024: 1, H0275: 1, T0010: 1, H0239: 1, H0375: 1, H0288: 1,				

		H0286: 1, H0070: 1, H0622: 1, T0023: 1, S0368: 1, T0006: 1, H0553: 1, H0628: 1, H0032: 1, H0674: 1, H0124: 1, H0068: 1, H0038: 1, H0634: 1, H0412: 1, H0100: 1, H0560: 1, H0625: 1, H0561: 1, H0132: 1, H0130: 1, H0646: 1, S0142: 1, H0142: 1, H0695: 1, L0369: 1, L0371: 1, L0373: 1, L0764: 1, L0773: 1, L0648: 1, L0521: 1, L0649: 1, L0784: 1, L0776: 1, L0558: 1, L0382: 1, L0787: 1, L0792: 1, L0664: 1, L0665: 1, H0520: 1, H0519: 1, H0593: 1, H0689: 1, H0683: 1, H0684: 1, H0435: 1, H0660: 1, H0648: 1, S0330: 1, H0710: 1, H0522: 1, S0044: 1, S0146: 1, S0406: 1, H0555: 1, H0436: 1, H0447: 1, H0627: 1,				

							H0444: 1, H0595: 1, L0608: 1, S0011: 1, H0668: 1, S0026: 1, H0136: 1, H0542: 1 and H0422: 1.		
HCOQF77	HCOQF77R	1150	1 - 357	3325					
HCOQG37	HCOQG37R	1151	3 - 395	3326	Pro-26 to Asn-34, Pro-50 to Pro-56, Arg-64 to Val-69, Val-97 to Lys-103.				
HCOQG47	HCOQG47R	1152	208 - 522	3327					
HCOQH46	HCOQH46R	1153	2 - 583	3328					
HCOQI14	HCOQI14R	1154	11 - 187	3329	Arg-10 to Ser-16.		L0777: 9, L0766: 5, L0748: 3, L0439: 3, H0599: 2, L0774: 2, L0747: 2, L0749: 2, L0779: 2, L0731: 2, H0305: 1, L0534: 1, H0675: 1, S0046: 1, H0004: 1, H0083: 1, L0456: 1, T0042: 1, S0344: 1, S0002: 1, L0369: 1, L0770: 1, L0773: 1, L0803: 1, L0776: 1, L0809: 1, L0791: 1, H0658: 1, H0670: 1, S3012: 1, L0756: 1, L0780: 1 and L0759: 1.		
HCOQI67	HCOQI67R	1155	1 - 126	3330					

HCOQJ06	HCOQJ06R	1156	8 - 457	3331				
HCOQJ07	HCOQJ07R	1157	3 - 707	3332				
HCOQJ36	HCOQJ36R	1158	149 - 328	3333		L0752: 4, H0156: 2, L0803: 2, L0776: 2, H0648: 2, L0439: 2, H0431: 1, H0575: 1, H0014: 1, T0023: 1, H0598: 1, H0591: 1, H0059: 1, L0772: 1, L0372: 1, L0764: 1, L0771: 1, L0773: 1, L0804: 1, L0774: 1, L0775: 1, L0375: 1, L0805: 1, L0629: 1, L0789: 1, L0665: 1, L0438: 1, H0658: 1, H0670: 1 and L0779: 1.		
HCOQJ79	HCOQJ79R	1159	1 - 471	3334				
HCOQK86	HCOQK86R	1160	1 - 519	3335				
HCOQL87	HCOQL87R	1161	3 - 398	3336				
HCOQM87	HCOQM87R	1162	3 - 143	3337	Arg-1 to Val-23.			
HCOQO79	HCOQO79R	1163	2 - 613	3338	Phe-94 to Glu-102, Gln-133 to Thr-140.			
HCOQP32	HCOQP32R	1164	3 - 149	3339				
HCOQS11	HCOQS11R	1165	75 - 443	3340				
HCOQU15	HCOQU15R	1166	2 - 430	3341	Asn-29 to Gly-38, Glu-50 to Gln-58.	L0665: 4, L0743: 4, H0486: 3, H0123: 3, H0024: 3, L0528: 3, L0748: 3, H0170: 2,		

							H0050: 2, L0769: 2, H0670: 2, L0747: 2, L0750: 2, H0171: 1, H0556: 1, H0583: 1, H0657: 1, S0212: 1, H0208: 1, H0619: 1, S0278: 1, H0550: 1, S0222: 1, H0438: 1, H0613: 1, H0331: 1, H0013: 1, H0635: 1, H0002: 1, S0474: 1, H0581: 1, H0009: 1, L0157: 1, H0012: 1, S0025: 1, H0239: 1, H0375: 1, H0266: 1, H0598: 1, H0135: 1, H0163: 1, H0087: 1, H0551: 1, H0494: 1, S0210: 1, L0640: 1, L0763: 1, L0646: 1, L0387: 1, L0766: 1, L0805: 1, L0776: 1, L0655: 1, L0657: 1, H0144: 1, H0520: 1, H0547: 1, H0519: 1, H0689: 1, H0658: 1, H0576: 1, L0779: 1 and L0759: 1.		
HCOQU92	HCOQU92R	1167	46 - 315	3342	Ile-3 to Arg-8, Pro-17 to Ser-22,	L0805: 7, L0776: 4, L0748: 4, H0545: 3,		

				Ser-28 to Ser-34, Thr-45 to Thr-56, Ser-58 to Thr-63, Tyr-74 to Thr-79.	S0438: 3, H0641: 3, L0588: 3, L0592: 3, T0049: 2, H0549: 2, H0431: 2, H0486: 2, L0471: 2, H0169: 2, S0372: 2, L0520: 2, L0553: 2, L0768: 2, L0649: 2, L0655: 2, L0527: 2, L0783: 2, L0532: 2, H0144: 2, H0682: 2, H0670: 2, S0378: 2, S0406: 2, L0750: 2, S0026: 2, H0542: 2, H0170: 1, H0716: 1, S0212: 1, H0638: 1, H0125: 1, S0444: 1, H0580: 1, H0393: 1, H0411: 1, H0587: 1, L0586: 1, T0114: 1, H0390: 1, T0048: 1, H0318: 1, H0596: 1, H0620: 1, H0375: 1, T0006: 1, H0606: 1, H0429: 1, S0294: 1, H0386: 1, L0770: 1, L0769: 1, L3904: 1, L0374: 1, L0773: 1, L0662: 1, L0766: 1, L0803: 1, L0774: 1, L0526: 1,	

					L0809: 1, L0793: 1, L0664: 1, S0053: 1, H0689: 1, H0684: 1, H0659: 1, H0658: 1, H0648: 1, S0330: 1, H0521: 1, H0522: 1, S0404: 1, L0749: 1, L0780: 1, L0731: 1 and H0543: 1.		
HCOQV27	HCOQV27R	1168	3 - 239	3343	Glu-1 to Lys-17, Val-25 to Asn-30, Phe-36 to Pro-42.	H0250: 35, L0770: 9, H0635: 6, L0483: 6, L0766: 6, H0521: 6, L0745: 6, S0003: 5, H0623: 5, L0776: 5, H0445: 5, S0408: 4, H0411: 4, H0634: 4, H0641: 4, L0598: 4, H0650: 3, H0656: 3, S0360: 3, H0574: 3, H0486: 3, H0373: 3, H0687: 3, H0591: 3, H0040: 3, L0662: 3, L0775: 3, L0665: 3, S0216: 3, L0748: 3, L0777: 3, S0134: 2, H0663: 2, S0007: 2, H0550: 2, H0013: 2, H0581: 2, H0510: 2, S0214: 2, H0615: 2, H0674: 2, S0440: 2,		

		L0771: 2, L0653: 2, H0658: 2, H0710: 2, H0518: 2, S0206: 2, L0744: 2, L0754: 2, L0750: 2, L0779: 2, L0731: 2, S0434: 2, L0605: 2, L0485: 2, L0362: 2, L0366: 2, H0543: 2, H0423: 2, H0170: 1, S0114: 1, T0049: 1, S0218: 1, L0002: 1, H0346: 1, H0661: 1, H0638: 1, S0418: 1, S0356: 1, S0354: 1, S0358: 1, S0376: 1, H0580: 1, H0619: 1, H0645: 1, L0717: 1, H0431: 1, H0609: 1, H0587: 1, H0632: 1, H0427: 1, S0280: 1, L0021: 1, H0599: 1, H0004: 1, S0049: 1, H0309: 1, H0596: 1, H0024: 1, S0362: 1, H0179: 1, H0271: 1, H0416: 1, S0336: 1, S0316: 1, H0328: 1, H0622: 1, H0553: 1, H0032: 1, H0124: 1, H0708: 1,				

HCOQX38	HCOQX38R	1169	23 - 439	3344	Trp-2 to Gly-7.	S0366: 1, H0087: 1, T0067: 1, H0100: 1, S0294: 1, H0633: 1, H0649: 1, S0422: 1, UNKWN: 1, L0667: 1, L0641: 1, L0764: 1, L0794: 1, L0649: 1, L0774: 1, L0784: 1, L0805: 1, L0657: 1, L0659: 1, L0791: 1, L0792: 1, L0664: 1, S0052: 1, S0428: 1, H0699: 1, H0703: 1, H0693: 1, L0438: 1, H0547: 1, H0593: 1, H0659: 1, H0670: 1, H0522: 1, S0013: 1, H0555: 1, H0436: 1, H0576: 1, H0478: 1, S3014: 1, L0740: 1, L0746: 1, L0758: 1, L0588: 1, L0595: 1, L0361: 1, S0026: 1, S0242: 1, S0194: 1 and H0352: 1.		
HCOQY33	HCOQY33R	1170	1 - 321	3345				
HCOQY43	HCOQY43R	1171	271 - 510	3346		S0282: 1, L0021: 1, S0438: 1, L0775: 1, L0666: 1, L0663: 1,		

HCOQZ02	HCOQZ02R	1172	387 - 473	3347	Lys-1 to Lys-13.	H0659: 1, H0670: 1 and L0758: 1.		
HCOQZ86	HCOQZ86R	1173	1 - 507	3348				
HCORA95	HCORA95R	1174	2 - 136	3349	Pro-1 to Phe-15.			
HCORB20	HCORB20R	1175	14 - 292	3350	Val-1 to Gly-9.			
HCORB43	HCORB43R	1176	1 - 303	3351				
HCORB66	HCORB66R	1177	3 - 611	3352	Asn-1 to Gly-8.			
HCORI18	HCORI18R	1178	105 - 317	3353	Asn-7 to Pro-33, Gly-40 to Gly-46, Tyr-49 to Tyr-71.	L0770: 3, H0685: 1, H0581: 1, H0553: 1, S0150: 1 and H0670: 1.		
HCORI25	HCORI25R	1179	3 - 419	3354	Leu-35 to Tyr-40.	L0754: 14, H0052: 13, L0748: 13, H0556: 12, L0591: 12, L0755: 11, L0752: 10, L0731: 9, L0601: 9, L0439: 8, L0777: 8, L0596: 8, H0046: 7, H0521: 7, L0758: 7, H0599: 6, H0622: 6, S0002: 6, L0646: 6, L0593: 6, H0265: 5, S0474: 5, L0776: 5, L0666: 5, L0741: 5, L0747: 5, S0026: 5, H0543: 5, H0619: 4, S0222: 4, H0013: 4, H0590: 4, H0544: 4, H0620: 4, H0124: 4, H0038: 4,		

		S0386: 4, L0766: 4, L0659: 4, H0547: 4, H0670: 4, S0378: 4, L0740: 4, L0749: 4, L0750: 4, S0434: 4, L0588: 4, L0589: 4, S0040: 3, H0580: 3, S6026: 3, H0486: 3, S0010: 3, S0051: 3, T0010: 3, H0083: 3, H0266: 3, S0250: 3, H0031: 3, H0591: 3, S0142: 3, S0344: 3, H0529: 3, L0770: 3, L0769: 3, L0761: 3, L0662: 3, L0774: 3, L0653: 3, L0663: 3, L0665: 3, L0438: 3, H0435: 3, S0152: 3, H0696: 3, S0342: 2, T0049: 2, H0657: 2, S0212: 2, H0638: 2, S0418: 2, S0354: 2, S0444: 2, S0360: 2, S0046: 2, S0132: 2, S0476: 2, L0717: 2, S0278: 2, H0549: 2, H0438: 2, H0587: 2, H0333: 2, H0427: 2, H0706: 2, H0545: 2,			

		H0050: 2, H0012: 2, S0050: 2, H0014: 2, S6028: 2, H0188: 2, H0604: 2, H0553: 2, H0617: 2, S0364: 2, S0366: 2, H0063: 2, H0087: 2, H0059: 2, S0038: 2, T0042: 2, H0560: 2, H0561: 2, H0509: 2, H0641: 2, H0647: 2, L0764: 2, L0771: 2, L0775: 2, L0655: 2, L0517: 2, L0783: 2, L0664: 2, L0565: 2, H0519: 2, H0658: 2, H0631: 2, S0390: 2, S3014: 2, L0745: 2, L0757: 2, S0436: 2, L0599: 2, L0595: 2, L0362: 2, S0011: 2, H0653: 2, H0665: 2, H0667: 2, H0542: 2, H0423: 2, H0422: 2, T0002: 1, H0222: 1, H0686: 1, H0717: 1, H0255: 1, H0661: 1, H0663: 1, H0662: 1, H0458: 1, S0420: 1, S0442: 1, S0376: 1, H0208: 1,				

		S0045: 1, H0645: 1, S0300: 1, H0406: 1, S0220: 1, H0431: 1, H0455: 1, H0404: 1, H0600: 1, H0586: 1, H0642: 1, H0492: 1, T0109: 1, H0069: 1, S0280: 1, H0156: 1, H0004: 1, H0618: 1, H0253: 1, S0049: 1, H0194: 1, H0251: 1, T0103: 1, T0115: 1, H0327: 1, H0457: 1, L0041: 1, H0569: 1, L0471: 1, H0154: 1, H0015: 1, S0362: 1, H0239: 1, H0355: 1, H0510: 1, H0375: 1, H0594: 1, S0022: 1, H0428: 1, H0644: 1, H0628: 1, H0032: 1, L0456: 1, S0036: 1, H0040: 1, H0616: 1, H0551: 1, H0268: 1, H0056: 1, H0623: 1, H0100: 1, H0494: 1, S0440: 1, H0131: 1, H0130: 1, H0633: 1, S0422: 1, S0426: 1, L0369: 1, L3905: 1,				

						L0667: 1, L0363: 1, L0794: 1, L0803: 1, L0375: 1, L0651: 1, L0806: 1, L0805: 1, L0654: 1, L0379: 1, L0526: 1, L0519: 1, L0647: 1, L0791: 1, S0428: 1, H0144: 1, S0374: 1, H0520: 1, S0126: 1, H0711: 1, H0660: 1, H0672: 1, S0328: 1, H0539: 1, S0406: 1, H0555: 1, H0436: 1, H0627: 1, S0432: 1, S0037: 1, L0743: 1, L0744: 1, L0751: 1, S0031: 1, S0394: 1, L0592: 1, L0485: 1, L0608: 1, L0366: 1, H0136: 1, H0506: 1 and H0352: 1.		
HCQCR82	HCQCR82R	1180	48 - 206	3355	Glu-9 to Gly-17.			
HCRME42	HCRME42R	1181	1 - 537	3356	Lys-14 to Gly-26, Glu-33 to Arg-44, Pro-64 to Pro-69, Pro-79 to Asn-88, Thr-109 to Pro-123.			
HDABR53	HDABR53R	1182	2 - 463	3357				
HDLBE03	HDLBE03R	1183	158 - 325	3358	Ala-17 to Asn-23.			
HDPFI26	HDPFI26R	1184	37 - 303	3359	Ser-1 to Thr-8,			

HDTAQ74	HDTAQ74R	1185	133 - 414	3360	Glu-17 to Ala-32, Arg-39 to Trp-47.	L0759: 10, L0774: 3, H0648: 3, H0686: 2, S0360: 2, L0622: 2, H0486: 2, L0521: 2, L0775: 2, H0659: 2, S0328: 2, L0779: 2, L0755: 2, H0341: 1, S0354: 1, S0358: 1, H0351: 1, S0222: 1, L0021: 1, H0025: 1, L0105: 1, T0115: 1, H0545: 1, H0571: 1, H0050: 1, L0471: 1, S6028: 1, S0003: 1, H0031: 1, H0316: 1, H0038: 1, H0087: 1, H0494: 1, H0509: 1, S0142: 1, L0520: 1, L0769: 1, L0638: 1, L0772: 1, L0794: 1, L0803: 1, L0804: 1, L0382: 1, L0367: 1, L0665: 1, S0374: 1, H0690: 1, H0684: 1, S0044: 1, S3012: 1, S0027: 1, L0744: 1, L0777: 1, L0758: 1, L0604: 1, S0026: 1 and		

							S0276: 1.		
HDTBP08	HDTBP08R	1186	231 - 431	3361	Leu-21 to Ala-27, Pro-48 to Gly-55.				
HDTDA21	HDTDA21R	1187	207 - 431	3362	Ala-14 to Leu-20.				
HDTDB88	HDTDB88R	1188	102 - 215	3363	Tyr-25 to Phe-32.				
HDTJR38	HDTJR38R	1189	179 - 364	3364			L0748: 50, L0754: 42, L0731: 31, H0644: 30, L0747: 29, H0551: 22, S0418: 21, L0659: 17, H0619: 15, L0663: 14, L0666: 13, S0360: 10, H0622: 10, H0031: 10, H0553: 10, L0662: 10, S0126: 10, L0757: 10, L0603: 10, S0420: 8, H0486: 8, H0013: 8, H0050: 8, H0623: 8, L0717: 7, H0144: 7, L0770: 6, L0750: 6, H0427: 5, H0024: 5, H0328: 5, H0030: 5, L0773: 5, L0665: 5, L0749: 5, H0713: 4, T0039: 4, S0280: 4, H0012: 4, H0038: 4, L0794: 4, L0774: 4, L0775: 4, L0805: 4, H0624: 3, H0170: 3, H0171: 3, S0356: 3, H0329: 3, S0046: 3,		

		H0331: 3, H0575: 3, L0471: 3, H0620: 3, S0250: 3, H0032: 3, H0591: 3, L0598: 3, L0803: 3, L0653: 3, L0657: 3, H0670: 3, S0406: 3, H0555: 3, L0780: 3, L0605: 3, H0667: 3, H0717: 2, T0049: 2, S0212: 2, H0661: 2, S0376: 2, S0007: 2, H0208: 2, S0476: 2, H0645: 2, H0411: 2, H0437: 2, H0550: 2, H0586: 2, H0333: 2, H0599: 2, H0042: 2, H0545: 2, H0123: 2, H0105: 2, H0014: 2, H0051: 2, H0375: 2, L0142: 2, H0598: 2, H0135: 2, H0040: 2, S0372: 2, L0520: 2, L0640: 2, L0769: 2, L5566: 2, L0772: 2, L0646: 2, L0771: 2, L0363: 2, L0768: 2, L0375: 2, L0654: 2, L0776: 2, L0809: 2, L0438: 2, H0547: 2, H0519: 2,				

		L0602: 2, L0743: 2, L0744: 2, L0439: 2, L0758: 2, L0759: 2, L0588: 2, L0599: 2, L0361: 2, H0716: 1, H0294: 1, S0430: 1, S0298: 1, S0132: 1, H0351: 1, H0369: 1, S0222: 1, H0370: 1, H0392: 1, H0409: 1, H0587: 1, H0574: 1, H0485: 1, T0040: 1, T0060: 1, H0244: 1, L0021: 1, H0003: 1, H0036: 1, H0274: 1, H0253: 1, H0505: 1, H0251: 1, H0544: 1, H0546: 1, H0046: 1, H0081: 1, H0019: 1, T0003: 1, H0057: 1, H0015: 1, H0373: 1, H0275: 1, H0594: 1, S0003: 1, H0039: 1, H0111: 1, H0674: 1, S0364: 1, S0036: 1, H0090: 1, H0063: 1, H0087: 1, H0268: 1, H0412: 1, H0059: 1, H0100: 1, L0564: 1, H0561: 1, S0210: 1,				

HE8QX44	HE8QX44R	1190	1 - 288	3365	Thr-8 to Thr-22, Phe-42 to Lys-51, Arg-60 to Lys-69.	L0369: 1, L3904: 1, L0800: 1, L0641: 1, L0764: 1, L5564: 1, L0804: 1, L0378: 1, L0806: 1, L0807: 1, L0526: 1, L0787: 1, L0788: 1, L0791: 1, L0793: 1, S0374: 1, H0691: 1, T0068: 1, H0690: 1, H0682: 1, H0684: 1, H0658: 1, H0672: 1, H0651: 1, H0518: 1, H0696: 1, S0146: 1, S0037: 1, S3014: 1, S0027: 1, S0028: 1, S0206: 1, S0032: 1, H0445: 1, L0589: 1, L0590: 1, L0485: 1, L0604: 1, H0668: 1, H0653: 1, S0242: 1, S0194: 1 and H0008: 1.			
HE9QU94	HE9QU94R	1191	3 - 170	3366	Arg-1 to Cys-23, Trp-25 to Ser-35.				
HEAHF02	HEAHF02R	1192	32 - 376	3367	Ser-10 to Thr-34, Ser-37 to Asn-89.				
HEEAY40	HEEAY40R	1193	3 - 128	3368	Thr-15 to Ser-26.				

HEGAF68	HEGAF68R	1194	45 - 221	3369	Glu-9 to Gly-17.			
HEOSP11	HEOSP11R	1195	96 - 395	3370	Pro-13 to Leu-25.	H0457: 14, L0751: 13, H0617: 8, L0761: 7, L0666: 6, L0664: 6, L0665: 6, H0593: 6, L0662: 5, L0748: 5, H0052: 4, H0014: 4, H0529: 4, L0655: 4, L0809: 4, L0663: 4, H0436: 4, L0747: 4, L0758: 4, H0592: 3, H0587: 3, H0581: 3, L0763: 3, L0769: 3, L0659: 3, H0539: 3, L0779: 3, S0434: 3, H0506: 3, H0295: 2, H0650: 2, H0657: 2, L0005: 2, S0356: 2, S0442: 2, S0354: 2, S0360: 2, H0580: 2, H0733: 2, H0553: 2, H0135: 2, H0560: 2, H0625: 2, H0647: 2, L0374: 2, L0657: 2, L0647: 2, H0682: 2, H0672: 2, H0521: 2, S0028: 2, L0743: 2, L0749: 2, L0752: 2, L0755: 2, L0759: 2, L0593: 2, S0446: 2,		

		L0600: 2, H0556: 1, H0686: 1, H0717: 1, H0656: 1, S0001: 1, H0661: 1, H0663: 1, H0402: 1, S0418: 1, S0420: 1, S0358: 1, S0376: 1, S0408: 1, S0045: 1, S0132: 1, H0619: 1, H0549: 1, S0222: 1, H0441: 1, H0392: 1, H0600: 1, H0586: 1, H0559: 1, H0486: 1, H0013: 1, S0280: 1, H0599: 1, H0575: 1, H0618: 1, H0318: 1, S0474: 1, S0049: 1, H0251: 1, T0115: 1, H0545: 1, H0009: 1, H0567: 1, H0571: 1, H0050: 1, L0471: 1, S0051: 1, S6028: 1, H0687: 1, H0428: 1, H0622: 1, T0006: 1, H0213: 1, L0142: 1, H0181: 1, H0032: 1, H0056: 1, H0100: 1, H0494: 1, H0561: 1, H0652: 1, S0142: 1, S0344: 1, L0625: 1, L0770: 1,				

HFABK01	HFABK01R	1196	26 - 112	3371	Asn-4 to Tyr-9.	L0639: 1, L0646: 1, L0800: 1, L0641: 1, L0642: 1, L0648: 1, L0794: 1, L0766: 1, L0649: 1, L0650: 1, L0774: 1, L0651: 1, L0653: 1, L0776: 1, L0629: 1, L0656: 1, L0636: 1, L5623: 1, L0792: 1, S0428: 1, H0726: 1, S0310: 1, H0690: 1, H0684: 1, H0658: 1, H0670: 1, S0330: 1, S0380: 1, S0404: 1, S0406: 1, H0555: 1, L0611: 1, H0540: 1, L0741: 1, L0744: 1, L0777: 1, S0436: 1, L0601: 1, L0366: 1, S0106: 1, S0192: 1, H0423: 1 and S0424: 1.		
HFADS75	HFADS75R	1197	102 - 365	3372	Ala-16 to Arg-26, Pro-68 to Gly-78.			
HFIBG63	HFIBG63R	1198	2 - 409	3373				
HFIJB15	HFIJB15R	1199	32 - 151	3374				
HFIXK57	HFIXK57R	1200	2 - 211	3375		H0594: 18, L0777: 10, L0766: 6, H0595: 6, H0170: 5, H0373: 5,		

		L0598: 5, L0665: 5, S0412: 5, H0411: 4, L0662: 4, L0756: 4, L0731: 4, S0260: 4, H0624: 3, H0171: 3, S0282: 3, S0388: 3, L0776: 3, L0752: 3, L0758: 3, S0194: 3, L0717: 2, S0280: 2, H0428: 2, H0063: 2, S0344: 2, S0422: 2, L0650: 2, L0659: 2, L0666: 2, L0663: 2, L0439: 2, H0685: 1, S0218: 1, H0650: 1, H0177: 1, H0402: 1, S0358: 1, S0360: 1, S0046: 1, S0278: 1, H0550: 1, S0222: 1, H0431: 1, H0600: 1, H0592: 1, H0587: 1, H0486: 1, L0021: 1, H0599: 1, H0037: 1, H0263: 1, H0545: 1, H0050: 1, H0057: 1, L0163: 1, T0023: 1, H0598: 1, S0036: 1, H0551: 1, H0100: 1, H0359: 1, L0065: 1, H0649: 1, L0769: 1,			

						L0761: 1, L0667: 1, L0630: 1, L0372: 1, L0764: 1, L0521: 1, L0533: 1, L0775: 1, L0651: 1, L0806: 1, L0655: 1, L0656: 1, S0374: 1, H0547: 1, S0328: 1, H0539: 1, H0696: 1, L0741: 1, L0744: 1, L0740: 1, L0754: 1, L0747: 1, L0750: 1, L0753: 1, L0759: 1, S0031: 1, L0485: 1, L0362: 1, S0242: 1, H0543: 1 and S0398: 1.			
HFIZQ64	HFIZQ64R	1201	18 - 137	3376	Glu-27 to Leu-36.				
HFKKK36	HFKKK36R	1202	3 - 86	3377	Pro-3 to Tyr-22.				
HFPEC93	HFPEC93R	1203	75 - 233	3378	Lys-17 to Thr-23.				
HFPIX37	HFPIX37R	1204	1 - 270	3379	Pro-75 to Cys-89.	AR089: 4, AR096: 3, AR033: 3, AR060: 3, AR061: 1, AR104: 1, AR055: 1, AR053: 0, AR039: 0, AR052: 0 H0583: 1, H0662: 1, S0222: 1, S0049: 1, H0272: 1, H0670: 1, H0521: 1, H0555: 1 and S0436: 1.			
HFTDK36	HFTDK36R	1205	18 - 314	3380	Cys-5 to Pro-21,				

HFVIB28	HFVIB28R	1206	11 - 250	3381	His-66 to Leu-77, Gln-80 to Ala-88, Tyr-92 to Ser-98.				
HFXGR60	HFXGR60R	1207	353 - 57	3382		S0001: 1			
HHAUD07	HHAUD07R	1208	304 - 426	3383	Val-24 to Leu-31.				
HHBFO21	HHBFO21R	1209	54 - 230	3384					
HHEVG50	HHEVG50R	1210	1 - 474	3385					
HHFGQ65	HHFGQ65RA	1211	53 - 277	3386	Arg-2 to Ser-7.				
HHFOE48	HHFOE48RP00B	1212	181 - 426	3387		H0666: 13, S0358: 10, H0620: 10, L0750: 8, L0747: 7, L0731: 7, H0135: 5, L0659: 5, L0740: 5, L0757: 5, S0360: 4, H0123: 4, S0022: 4, L0666: 4, L0665: 4, S0028: 4, L0748: 4, L0777: 4, L0588: 4, H0265: 3, S0420: 3, H0208: 3, H0545: 3, H0046: 3, H0024: 3, H0284: 3, H0100: 3, L0650: 3, L0375: 3, L0382: 3, H0651: 3, L0755: 3, H0352: 3, S0278: 2, H0592: 2, H0333: 2, H0253: 2, H0544: 2, H0081: 2, H0012: 2, H0266: 2, H0286: 2,			

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						H0615: 1, H0688: 1, H0031: 1, H0634: 1, H0087: 1, H0334: 1, H0633: 1, H0646: 1, L0772: 1, L0800: 1, L0643: 1, L0764: 1, L0662: 1, L0767: 1, L0775: 1, L0651: 1, L0806: 1, L0805: 1, L0776: 1, L0656: 1, L0783: 1, L0383: 1, L0543: 1, L0789: 1, L0663: 1, H0593: 1, H0684: 1, H0659: 1, H0658: 1, H0660: 1, H0709: 1, S0152: 1, H0521: 1, H0627: 1, L0611: 1, L0439: 1, L0745: 1, L0759: 1, L0593: 1, L0361: 1, L0603: 1, S0026: 1, H0667: 1 and H0506: 1.		
HHSFG15	HHSFG15R	1213	3 - 62	3388					
HHSGP15	HHSGP15R	1214	77 - 142	3389					
HHSGQ17	HHSGQ17R	1215	112 - 270	3390					
HKBAD05	HKBAD05R	1216	49 - 315	3391	Pro-13 to Leu-18, Leu-37 to Arg-42, Lys-65 to Gly-77.				
HKZAD21	HKZAD21R	1217	244 - 405	3392					
HKZAE07	HKZAE07R	1218	1 - 138	3393	Val-40 to Tyr-46.	L0752: 11, L0662: 9,			

		L0596: 9, L0659: 8, L0665: 7, L0766: 5, L0750: 5, L0521: 4, L0740: 4, L0757: 4, L0771: 3, L0775: 3, L0809: 3, L0666: 3, L0664: 3, H0648: 3, L0755: 3, L0758: 3, L0591: 3, L0785: 2, L0717: 2, H0036: 2, H0052: 2, H0529: 2, L0769: 2, L0637: 2, L0646: 2, L0765: 2, L0651: 2, L0653: 2, L0776: 2, L0655: 2, L0663: 2, H0682: 2, L0748: 2, L0439: 2, L0731: 2, L0759: 2, L0593: 2, L0595: 2, L0601: 2, H0686: 1, S0134: 1, L0778: 1, H0484: 1, H0661: 1, H0662: 1, H0393: 1, H0643: 1, H0002: 1, H0599: 1, H0318: 1, S0049: 1, H0251: 1, L0040: 1, H0545: 1, L0041: 1, N0006: 1, N0007: 1, S0388: 1, L0483: 1, H0606: 1,			

HKZAG45	HKZAG45RA	1219	79 - 327	3394	Gly-1 to Val-7, Lys-15 to Leu-25, Pro-52 to Cys-57.	H0038: 1, H0040: 1, H0551: 1, H0413: 1, H0059: 1, H0560: 1, H0538: 1, S0002: 1, L0763: 1, L0772: 1, L0364: 1, L0649: 1, L0661: 1, L0657: 1, L0542: 1, L0526: 1, L0783: 1, L0382: 1, L0519: 1, L0528: 1, L0788: 1, L0565: 1, L0438: 1, H0547: 1, H0689: 1, H0690: 1, H0435: 1, H0658: 1, H0660: 1, S0328: 1, L0602: 1, S0004: 1, S0044: 1, S0404: 1, H0555: 1, H0436: 1, S0028: 1, L0742: 1, L0751: 1, L0747: 1, L0756: 1, L0592: 1, L0581: 1, L0603: 1, H0543: 1, H0422: 1 and H0352: 1.			
HKZAI14	HKZAI14R	1220	3 - 368	3395	Lys-47 to Glu-52, Ala-71 to Asp-76, Asp-89 to Ser-110.				

HKZAI68	HKZAI68RA	1221	2 - 79	3396	Ser-9 to Ala-15.	S0474: 22, S0360: 13, H0556: 11, S0358: 11, L0747: 11, H0087: 10, S0126: 10, H0124: 9, S0410: 8, S0278: 8, H0024: 8, L0588: 8, S0206: 7, S0046: 6, L0731: 6, H0543: 6, H0265: 5, S0212: 5, S0045: 5, H0620: 5, H0594: 5, H0090: 5, H0063: 5, H0551: 5, T0042: 5, L0530: 5, H0144: 5, H0696: 5, S3014: 5, L0758: 5, S0192: 5, S0116: 4, H0549: 4, H0013: 4, H0530: 4, H0544: 4, H0081: 4, L0471: 4, H0012: 4, H0644: 4, H0163: 4, H0412: 4, H0100: 4, L0769: 4, L0771: 4, S0027: 4, L0740: 4, L0757: 4, L0605: 4, H0423: 4, H0624: 3, H0713: 3, S0418: 3, S0444: 3, S0408: 3, H0251: 3, H0545: 3, S0051: 3, H0083: 3, H0290: 3,		

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		H0623: 1, S0438: 1, H0132: 1, S0150: 1, H0633: 1, S0144: 1, S0210: 1, S0002: 1, S0426: 1, H0695: 1, L0763: 1, L0772: 1, L0643: 1, L0764: 1, L0766: 1, L0650: 1, L0774: 1, L0775: 1, L0654: 1, L0657: 1, L0540: 1, L0526: 1, L0518: 1, L0782: 1, L0384: 1, L0519: 1, L0544: 1, L0793: 1, L0666: 1, H0702: 1, H0701: 1, H0547: 1, H0689: 1, H0682: 1, H0660: 1, H0672: 1, H0651: 1, S0328: 1, S0330: 1, H0539: 1, S0380: 1, H0521: 1, H0522: 1, S0004: 1, H0134: 1, H0436: 1, S0392: 1, S0390: 1, S0037: 1, S0032: 1, L0743: 1, L0439: 1, L0754: 1, L0750: 1, L0779: 1, L0759: 1, S0260: 1, H0595: 1, H0707: 1, L0604: 1,					

HKZAQ39	HKZAQ39R	1222	1 - 480	3397	Ser-1 to Lys-6, Asp-48 to Gly-55, Pro-68 to Phe-76, Pro-83 to Gly-89, Asn-100 to Asp-108, Glu-134 to Lys-141, Lys-144 to Asp-160.	H0668: 1, H0653: 1, H0542: 1, H0422: 1, S0042: 1, S0456: 1 and S0446: 1.			
HKZAR58	HKZAR58R	1223	3 - 266	3398	Met-41 to Gln-47.				
HKZAS59	HKZAS59R	1224	1 - 462	3399	Gln-54 to Leu-59, Glu-70 to Lys-76, Lys-147 to Ser-154.				
HKZAS64	HKZAS64R	1225	1 - 276	3400	Asp-1 to His-35, Pro-67 to His-75.				
HKZAS84	HKZAS84R	1226	2 - 103	3401	Ser-11 to Gly-18.	L0743: 19, L0731: 13, L0744: 12, L0748: 11, L0666: 9, L0751: 9, L0664: 8, H0144: 8, H0333: 7, H0617: 7, L0769: 7, L0662: 7, S0022: 6, H0616: 6, H0087: 6, L0483: 5, H0181: 5, L0517: 5, L0519: 5, L0754: 5, H0677: 5, S0051: 4, S0344: 4, L0663: 4,			

		H0658: 4, L0747: 4, L0750: 4, L0757: 4, H0295: 3, T0049: 3, H0255: 3, L0622: 3, T0039: 3, H0253: 3, H0545: 3, L0163: 3, H0594: 3, H0188: 3, H0673: 3, H0100: 3, S0142: 3, L0372: 3, L0775: 3, L0776: 3, L0657: 3, L0382: 3, L0665: 3, H0672: 3, S0027: 3, L0742: 3, L0752: 3, S0260: 3, H0445: 3, L0596: 3, L0588: 3, L0599: 3, S0420: 2, H0637: 2, S0045: 2, S0132: 2, S0300: 2, S0278: 2, S0222: 2, H0431: 2, H0392: 2, H0599: 2, H0575: 2, H0052: 2, H0309: 2, H0085: 2, H0597: 2, H0544: 2, H0428: 2, H0124: 2, S0036: 2, H0163: 2, H0038: 2, H0413: 2, H0529: 2, L0369: 2, L0763: 2, L0770: 2, L0638: 2, L0764: 2,				

		L0771: 2, L0803: 2, L0804: 2, L0375: 2, L0655: 2, L0384: 2, L0809: 2, L0532: 2, S0374: 2, S0126: 2, H0670: 2, H0651: 2, H0521: 2, S0028: 2, L0740: 2, L0485: 2, L0362: 2, L0601: 2, S0192: 2, S0424: 2, L0600: 2, H0556: 1, T0002: 1, H0686: 1, S0040: 1, S0342: 1, H0294: 1, S0114: 1, S0134: 1, H0650: 1, H0657: 1, L0785: 1, H0341: 1, S0180: 1, S0212: 1, H0484: 1, H0483: 1, H0254: 1, H0671: 1, H0662: 1, H0402: 1, H0638: 1, S0418: 1, S0356: 1, T0007: 1, S0358: 1, S0007: 1, H0208: 1, H0441: 1, H0438: 1, H0587: 1, S0005: 1, L0623: 1, L0477: 1, T0114: 1, S0280: 1, L0021: 1, H0590: 1, H0004: 1, H0618: 1,				

		S0010: 1, H0318: 1, S0049: 1, H0251: 1, H0596: 1, T0110: 1, H0327: 1, H0009: 1, H0123: 1, L0471: 1, H0006: 1, H0014: 1, H0051: 1, S0388: 1, H0510: 1, S0334: 1, H0687: 1, T0023: 1, T0006: 1, H0424: 1, H0182: 1, H0606: 1, H0383: 1, H0165: 1, H0166: 1, S0366: 1, H0135: 1, H0090: 1, T0067: 1, H0488: 1, H0412: 1, T0069: 1, S0112: 1, L0564: 1, H0494: 1, S0015: 1, H0561: 1, L0762: 1, L0640: 1, L0637: 1, L0761: 1, L0667: 1, L0772: 1, L0373: 1, L0646: 1, L0643: 1, L0374: 1, L0765: 1, L0773: 1, L0648: 1, L0521: 1, L0768: 1, L0364: 1, L0533: 1, L0650: 1, L0774: 1, L0376: 1, L0806: 1, L0652: 1, L0653: 1,				

HKZAV69	HKZAV69R	1227	2 - 412	3402	Val-6 to Lys-13, Tyr-23 to Asn-33, Lys-46 to Lys-51, Leu-75 to Asn-85, Asp-101 to Glu-106.	L0606: 1, L0629: 1, L0659: 1, L0636: 1, L0542: 1, L0526: 1, L0518: 1, L0782: 1, L0783: 1, H0689: 1, H0690: 1, H0682: 1, H0683: 1, H0659: 1, H0660: 1, S0328: 1, S0330: 1, S0380: 1, H0522: 1, S0004: 1, H0555: 1, L0611: 1, S3014: 1, S0206: 1, L0755: 1, L0758: 1, H0444: 1, L0587: 1, L0589: 1, L0605: 1, L0591: 1, L0608: 1, L0361: 1, L0366: 1, H0665: 1, S0242: 1, S0194: 1, H0543: 1, H0423: 1, S0460: 1, S0456: 1 and H0506: 1.		
HKZAV72	HKZAV72R	1228	2 - 163	3403	Cys-1 to Val-33, Ala-47 to Glu-54.			
HKZAX48	HKZAX48R	1229	137 - 361	3404		L0771: 3, L0021: 1, S0036: 1, H0689: 1 and		

						H0659: 1.		
HKZBB22	HKZBB22R	1230	2 - 520	3405	Arg-5 to Leu-11, Arg-32 to Lys-39, Thr-117 to Lys-122.			
HKZBS89	HKZBS89R	1231	1 - 381	3406	Gln-41 to His-48, Leu-55 to Gly-61, Pro-71 to Gly-79, Ala-104 to His-111.			
HLDQQ80	HLDQQ80R	1232	2 - 112	3407				
HLDXE19	HLDXE19R	1233	2 - 190	3408	Ala-2 to Lys-12.			
HLICD55	HLICD55R	1234	2 - 151	3409				
HLJBI32	HLJBI32R	1235	430 - 648	3410				
HLJBI37	HLJBI37R	1236	144 - 398	3411	Pro-77 to Lys-85.			
HLTHA47	HLTHA47R	1237	118 - 411	3412	Pro-82 to Lys-92.			
HLTJA50	HLTJA50R	1238	331 - 585	3413				
HLWAC95	HLWAC95R	1239	2 - 337	3414	Gln-20 to Ser-30.			
HLWDZ38	HLWDZ38R	1240	57 - 275	3415	Phe-45 to Ser-51.			
HLYDI57	HLYDI57R	1241	2 - 238	3416				
HMCFO19	HMCFO19R	1242	131 - 199	3417				
HMCIZ44	HMCIZ44R	1243	67 - 225	3418	Lys-17 to Thr-23.			
HMCJE25	HMCJE25R	1244	3 - 161	3419	Met-40 to Thr-52.			
HMSPB25	HMSPB25R	1245	324 - 145	3420				
HMVBB04	HMVBB04R	1246	136 - 276	3421	Lys-18 to Lys-30.			
HNAAE01	HNAAE01R	1247	2 - 196	3422	Lys-18 to Lys-30.			
HNBUP08	HNBUP08R	1248	127 - 474	3423	Pro-37 to Arg-46, Gln-75 to Gly-81, Pro-83 to Ser-89.	L0766: 5, L0751: 4, H0662: 2, H0253: 2, L0754: 2, L0750: 2, H0170: 1, H0587: 1, H0327: 1, H0688: 1,		

						H0428: 1, S0210: 1, L0763: 1, L0770: 1, L0769: 1, L0646: 1, L0662: 1, L0803: 1, L0776: 1, L0655: 1, L0658: 1, L0659: 1, L0789: 1, L0666: 1, L0663: 1, L0665: 1, H0658: 1, H0670: 1, H0660: 1, S0380: 1, L0740: 1, L0755: 1, L0758: 1, L0589: 1, L0361: 1 and S0192: 1.		
HNBUY37	HNBUY37R	1249	2 - 289	3424		L0783: 4, S0280: 2, H0662: 1, H0550: 1, L0764: 1, L0662: 1, L0809: 1 and H0684: 1.		
HNBVL57	HNBVL57R	1250	179 - 541	3425				
HNHBC18	HNHBC18R	1251	1 - 279	3426	Glu-18 to Asp-35, Leu-52 to Gly-82.			
HNJFE85	HNJFE85R	1252	2 - 454	3427				
HNKCO29	HNKCO29R	1253	1 - 351	3428				
HNOAA22	HNOAA22R	1254	33 - 425	3429				
HNOAB27	HNOAB27R	1255	397 - 621	3430				
HNOAB28	HNOAB28R	1256	116 - 232	3431				
HNOAB88	HNOAB88R	1257	3 - 551	3432				
HNOAC04	HNOAC04R	1258	112 - 219	3433				
HNOAC15	HNOAC15R	1259	1 - 138	3434	Thr-1 to Ser-8, Pro-22 to Ser-27.			

HNOAE50	HNOAE50R	1260	89 - 577	3435	Thr-5 to Thr-14, Arg-20 to His-25, Arg-35 to Gly-40, Lys-58 to Arg-66, His-101 to Ser-107, Arg-111 to Lys-125, Leu-131 to Glu-140.			
HNOAE65	HNOAE65R	1261	2 - 535	3436	Pro-13 to Arg-21, Ser-42 to Phe-52, Lys-69 to Val-77, Ile-82 to Glu-87, Gly-93 to Gln-99, Val-118 to Asn-124, Lys-143 to Leu-152, Arg-154 to Glu-178.			
HNOAF22	HNOAF22R	1262	67 - 555	3437	Thr-5 to Thr-14, Arg-20 to His-25, Arg-35 to Gly-40, Lys-58 to Arg-66, His-101 to Ser-107, Arg-111 to Lys-125, Leu-131 to Arg-139, Arg-145 to Leu-153.			
HNOAF36	HNOAF36R	1263	2 - 145	3438	Arg-11 to Pro-17.	H0651: 2		
HNOAG34	HNOAG34R	1264	42 - 362	3439				
HNOAG94	HNOAG94R	1265	28 - 177	3440				
HNOAH67	HNOAH67R	1266	2 - 364	3441				
HNOAJ67	HNOAJ67R	1267	3 - 524	3442	Cys-2 to Gly-7.			
HNOAJ76	HNOAJ76R	1268	351 - 536	3443	Trp-6 to Glu-12.	H0134: 9, L0771: 8,		

		L0748: 7, L0731: 6, L0591: 6, L0592: 6, L0770: 5, L0747: 5, L0749: 5, L0750: 5, H0136: 5, H0050: 4, H0625: 4, H0529: 4, L0769: 4, L0752: 4, L0758: 4, S0007: 3, S0045: 3, H0591: 3, H0561: 3, L0761: 3, L0645: 3, L0766: 3, L0655: 3, L0657: 3, L0666: 3, H0696: 3, H0436: 3, L0754: 3, L0756: 3, L0755: 3, H0543: 3, H0686: 2, H0125: 2, S0420: 2, S0376: 2, H0351: 2, H0581: 2, S0049: 2, H0052: 2, L0163: 2, H0428: 2, H0090: 2, H0040: 2, T0041: 2, H0494: 2, H0646: 2, L0763: 2, L0521: 2, L0776: 2, L0665: 2, H0144: 2, L0751: 2, L0745: 2, S0031: 2, L0581: 2, L0608: 2, H0170: 1, H0171: 1, H0394: 1, S0114: 1,				

		S0218: 1, H0656: 1, S0444: 1, S0360: 1, H0637: 1, H0580: 1, H0619: 1, H0393: 1, L0717: 1, H0497: 1, H0486: 1, T0039: 1, T0114: 1, H0013: 1, H0244: 1, H0635: 1, H0427: 1, H0318: 1, H0178: 1, L0157: 1, H0081: 1, S0051: 1, H0292: 1, S0003: 1, L0483: 1, H0316: 1, H0135: 1, H0634: 1, H0551: 1, H0560: 1, S0440: 1, H0538: 1, L0640: 1, L0796: 1, L0667: 1, L0772: 1, L0373: 1, L0764: 1, L0662: 1, L0363: 1, L0768: 1, L0649: 1, L0388: 1, L0650: 1, L0774: 1, L0775: 1, L0375: 1, L0524: 1, L0653: 1, L0659: 1, L0663: 1, L0664: 1, S0053: 1, H0520: 1, S0126: 1, H0435: 1, H0660: 1, H0672: 1, H0651: 1, H0521: 1,		

							H0704: 1, S0044: 1, H0187: 1, S0028: 1, L0740: 1, L0779: 1, L0777: 1, L0753: 1, L0759: 1, L0596: 1, L0597: 1, L0595: 1, S0026: 1, H0217: 1 and S0384: 1.		
HNOAK11	HNOAK11R	1269	2 - 157	3444					
HNOAL51	HNOAL51R	1270	43 - 207	3445					
HNOAN85	HNOAN85R	1271	1 - 180	3446					
HNOAO59	HNOAO59R	1272	403 - 759	3447	Phe-74 to Pro-81.				
HNOAO71	HNOAO71R	1273	2 - 283	3448	Gly-1 to Leu-6, Pro-47 to Asp-52, Lys-63 to Glu-68.				
HNOAP21	HNOAP21R	1274	2 - 730	3449	Arg-9 to Arg-27, Gly-43 to Lys-48, Asp-61 to Ser-67, Ala-124 to Gly-130, Thr-146 to Lys-151, Phe-165 to Lys-170.				
HNOAQ24	HNOAQ24R	1275	2 - 664	3450			L0666: 10, H0510: 8, H0046: 6, H0617: 6, S0051: 4, H0135: 4, L0776: 4, L0439: 4, H0509: 3, L0665: 3, L0747: 3, H0445: 3, H0662: 2, S0420: 2, S0222: 2, H0574: 2, H0632: 2, H0427: 2,		

		H0575: 2, H0618: 2, H0253: 2, H0052: 2, H0545: 2, H0123: 2, H0687: 2, H0428: 2, H0100: 2, L0662: 2, L0806: 2, L0657: 2, L0659: 2, L0664: 2, H0691: 2, H0651: 2, L0744: 2, L0592: 2, L0599: 2, L0601: 2, S0040: 1, S0212: 1, H0483: 1, H0255: 1, H0663: 1, S0354: 1, H0208: 1, S6022: 1, H0441: 1, H0357: 1, H0455: 1, H0592: 1, H0331: 1, N0009: 1, H0013: 1, S0280: 1, H0349: 1, H0042: 1, S0049: 1, H0327: 1, H0544: 1, H0178: 1, H0012: 1, H0246: 1, H0024: 1, H0071: 1, H0107: 1, S6028: 1, H0266: 1, T0023: 1, T0006: 1, H0124: 1, S0036: 1, H0264: 1, H0059: 1, H0633: 1, H0647: 1, S0142: 1, L0369: 1, L0371: 1,				

						L0770: 1, L0769: 1, L0645: 1, L0764: 1, L0768: 1, L0775: 1, L0651: 1, L0525: 1, L0378: 1, L0653: 1, L0518: 1, L0809: 1, L0789: 1, L0792: 1, H0520: 1, S0126: 1, H0659: 1, H0658: 1, H0672: 1, H0539: 1, H0521: 1, S0044: 1, S0028: 1, L0743: 1, L0748: 1, S0031: 1, L0485: 1, H0653: 1, H0665: 1, H0667: 1, S0192: 1 and L0698: 1.		
HNOAQ47	HNOAQ47R	1276	1 - 642	3451	Ser-15 to Glu-23, Val-33 to Gly-40, Arg-47 to Pro-59, Ser-64 to Phe-70, Gly-92 to Lys-97, Lys-155 to Glu-166.			
HNOAR74	HNOAR74R	1277	122 - 400	3452	Pro-5 to Gly-11, Ser-20 to Ser-27.	L0794: 3, H0657: 2, L0766: 2, L0783: 2, L0789: 2, L0777: 2, L0759: 2, H0656: 1, S0116: 1, S0444: 1, S0360: 1, H0431: 1, S0010: 1, H0052: 1, H0596: 1, H0687: 1,		

					H0634: 1, L0637: 1, L0648: 1, L0649: 1, L0804: 1, L0774: 1, L0776: 1, L0655: 1, L0606: 1, L0809: 1, H0144: 1, H0698: 1, L0438: 1, H0690: 1, H0660: 1, H0651: 1, L0747: 1, L0749: 1, L0758: 1, L0601: 1, S0242: 1, S0196: 1 and H0543: 1.		
HNOAR85	HNOAR85R	1278	278 - 562	3453	Ser-48 to Leu-56, Ser-70 to Val-75, Thr-83 to Ala-92.	L0758: 6, H0031: 4, H0341: 3, S0022: 3, S0376: 2, H0586: 2, H0156: 2, H0575: 2, L0769: 2, L0803: 2, L0655: 2, L0809: 2, H0522: 2, S0027: 2, H0445: 2, S0412: 2, H0656: 1, S0358: 1, S0360: 1, H0574: 1, H0486: 1, H0013: 1, H0318: 1, H0327: 1, L0157: 1, H0015: 1, H0083: 1, S0003: 1, S0214: 1, H0039: 1, H0673: 1, H0591: 1, T0067: 1, H0412: 1, H0494: 1, H0529: 1,		

HNOAS07	HNOAS07R	1279	84 - 521	3454	Asn-80 to Gly-86, Glu-133 to Arg-138.	L0372: 1, L0764: 1, L0794: 1, L0649: 1, L0774: 1, L0775: 1, L0651: 1, L0807: 1, L0657: 1, L0789: 1, L0663: 1, H0519: 1, S0126: 1, H0684: 1, H0660: 1, H0666: 1, H0651: 1, H0518: 1, H0521: 1, S0028: 1, L0747: 1, L0777: 1, L0731: 1, S0194: 1, H0543: 1 and S0424: 1.			
HNOAS36	HNOAS36R	1280	3 - 254	3455	Leu-1 to Thr-7, Pro-39 to Ser-48, Trp-62 to Thr-68.				
HNOAS92	HNOAS92R	1281	2 - 385	3456	Pro-28 to Tyr-37, Leu-52 to Trp-57, Lys-109 to Leu-114.	H0457: 4, H0441: 3, H0393: 2, H0052: 2, H0620: 2, S0144: 2, H0521: 2, H0341: 1, S0358: 1, H0587: 1, H0632: 1, H0581: 1, H0309: 1, L0471: 1, H0622: 1, H0424: 1, H0213: 1, S0366: 1, H0163: 1, H0132: 1, S0142: 1, H0529: 1, H0547: 1, H0651: 1,			

HNOAT40	HNOAT40R	1282	96 - 317	3457		S3014: 1, L0748: 1, L0777: 1 and L0599: 1.		
						L0794: 5, H0052: 4, H0457: 4, L0438: 4, H0651: 4, H0581: 3, L0777: 3, S0116: 2, S0007: 2, S0222: 2, S0049: 2, N0006: 2, L0163: 2, S6028: 2, L0351: 2, H0130: 2, L0638: 2, L0803: 2, L0805: 2, L0439: 2, L0754: 2, L0750: 2, L0755: 2, H0580: 1, H0645: 1, H0486: 1, H0013: 1, S0346: 1, H0009: 1, L0157: 1, H0567: 1, H0562: 1, H0050: 1, T0010: 1, H0606: 1, H0040: 1, H0063: 1, S0210: 1, L0761: 1, L0667: 1, L0774: 1, L0526: 1, L0532: 1, L0666: 1, L0665: 1, H0658: 1, H0521: 1, H0576: 1, L0753: 1, L0758: 1, L0759: 1, L0593: 1, L0366: 1, H0543: 1 and S0462: 1.		

HNOAT76	HNOAT76R	1283	2 - 187	3458				
HNOAV91	HNOAV91R	1284	2 - 439	3459	Lys-28 to Tyr-49, Arg-75 to Ala-83, Thr-90 to Ala-95, Arg-107 to Asp-114, Arg-137 to Ser-146.			
HNOBD17	HNOBD17R	1285	98 - 316	3460				
HNOBE83	HNOBE83R	1286	2 - 607	3461	Arg-1 to Gly-6, Lys-21 to Gly-29, Gln-51 to Gly-56, Pro-82 to Asp-90, Lys-175 to Ser-180.	L0747: 16, H0651: 10, H0561: 9, L0758: 8, H0046: 7, L0663: 7, S0026: 7, H0656: 6, H0393: 6, H0494: 6, L0774: 6, L0659: 6, L0665: 6, L0750: 6, L0731: 6, L0596: 6, H0543: 6, H0341: 5, H0575: 5, H0529: 5, L0662: 5, L0655: 5, H0539: 5, L0439: 5, L0752: 5, S0114: 4, H0657: 4, H0351: 4, H0581: 4, H0551: 4, H0560: 4, S0372: 4, L0769: 4, L0764: 4, L0776: 4, H0144: 4, H0660: 4, H0648: 4, H0672: 4, S0028: 4, L0749: 4, L0362: 4, H0580: 3, H0497: 3, H0486: 3, H0318: 3,		

		H0014: 3, H0373: 3, H0553: 3, H0038: 3, T0041: 3, S0002: 3, L0761: 3, L0664: 3, S0126: 3, H0658: 3, H0666: 3, S0380: 3, S0152: 3, H0521: 3, H0707: 3, L0589: 3, L0605: 3, L0599: 3, L0593: 3, H0423: 3, H0265: 2, H0661: 2, S0356: 2, S0358: 2, S0360: 2, S0408: 2, S0410: 2, S0046: 2, H0409: 2, S0280: 2, H0251: 2, L0738: 2, L0471: 2, H0057: 2, L0185: 2, H0594: 2, H0188: 2, S0003: 2, H0090: 2, H0412: 2, H0413: 2, S0440: 2, S0150: 2, S0144: 2, H0538: 2, L0763: 2, L0627: 2, L0775: 2, L0653: 2, H0519: 2, H0435: 2, H0659: 2, H0436: 2, H0478: 2, S0027: 2, L0756: 2, L0755: 2, L0759: 2, H0445: 2, L0588: 2,				

		L0590: 2, H0542: 2, H0422: 2, H0171: 1, L0448: 1, H0556: 1, H0222: 1, S0342: 1, H0650: 1, S0035: 1, H0483: 1, H0671: 1, H0662: 1, H0449: 1, H0459: 1, H0125: 1, S0420: 1, S0354: 1, S0444: 1, S0045: 1, H0443: 1, H0370: 1, H0392: 1, L0622: 1, L0623: 1, T0040: 1, H0013: 1, H0635: 1, H0427: 1, H0156: 1, H0590: 1, S0010: 1, H0052: 1, T0110: 1, H0597: 1, H0546: 1, H0009: 1, H0093: 1, S0051: 1, T0010: 1, H0510: 1, H0267: 1, H0687: 1, H0252: 1, H0428: 1, H0039: 1, H0622: 1, H0181: 1, H0032: 1, H0068: 1, H0598: 1, H0040: 1, H0087: 1, T0067: 1, H0488: 1, L0564: 1, T0042: 1, H0625: 1, H0130: 1, H0641: 1,			

						H0633: 1, S0208: 1, S0422: 1, S0426: 1, L0520: 1, L0762: 1, L0770: 1, L0796: 1, L0630: 1, L0646: 1, L0773: 1, L0766: 1, L0381: 1, L0388: 1, L0804: 1, L0650: 1, L0375: 1, L0651: 1, L0784: 1, L0656: 1, L0518: 1, L0519: 1, L0530: 1, L0368: 1, S0053: 1, S0374: 1, H0547:.1, H0689: 1, H0682: 1, H0684: 1, H0670: 1, H0518: 1, S0013: 1, H0704: 1, S0044: 1, H0214: 1, S0404: 1, S0406: 1, H0555: 1, H0576: 1, S0392: 1, L0751: 1, S0031: 1, H0444: 1, S0106: 1, S0011: 1, H0667: 1, S0192: 1, S0242: 1, S0276: 1, L0697: 1 and L0360: 1.		
HNOBV55	HNOBV55RA	1287	111 - 506	3462	Pro-14 to Gly-22, Ile-31 to Ala-36, Lys-53 to Ile-65.			
HNOCE63	HNOCE63R	1288	2 - 394	3463	Val-2 to Leu-20.			

HNOCL43	HNOCL43R	1289	2 - 193	3464				
HNOCN02	HNOCN02R	1290	1 - 624	3465				
HNOCN10	HNOCN10R	1291	1 - 453	3466		H0556: 11, H0265: 9, H0012: 4, H0616: 4, H0393: 3, H0620: 3, L0163: 3, H0135: 3, S0002: 3, H0651: 3, L0596: 3, H0542: 3, H0543: 3, S0418: 2, S0045: 2, H0266: 2, S0150: 2, H0521: 2, L0591: 2, S0040: 1, H0341: 1, H0663: 1, S0354: 1, S0358: 1, S0046: 1, S0222: 1, H0586: 1, H0486: 1, H0635: 1, H0618: 1, H0581: 1, S0049: 1, H0263: 1, T0110: 1, H0009: 1, T0003: 1, H0373: 1, S0051: 1, S0336: 1, H0290: 1, H0286: 1, H0328: 1, H0622: 1, H0553: 1, H0124: 1, H0090: 1, S0038: 1, H0100: 1, T0042: 1, S0015: 1, H0560: 1, H0509: 1, H0130: 1, L0654: 1, H0144: 1,		

HNOCR44	HNOCR44R	1292	3 - 581	3467	Pro-1 to Lys-10, Phe-31 to Asn-37, Gln-42 to Leu-50, Arg-58 to Gln-65, Leu-86 to Ala-91, Tyr-101 to Ala-111.	L0438: 1, H0547: 1, H0519: 1, H0593: 1, H0435: 1, L0602: 1, S0332: 1, H0522: 1, H0134: 1, S3014: 1, L0439: 1, H0445: 1, S0434: 1, L0485: 1, L0604: 1, L0593: 1, L0594: 1, L0601: 1, H0422: 1 and S0398: 1.			
HNOCU03	HNOCU03R	1293	1 - 258	3468	Glu-1 to Asp-6.				
HNODD77	HNODD77R	1294	204 - 407	3469					
HNODG11	HNODG11R	1295	63 - 320	3470	Ser-47 to Ile-53.				
HNODM92	HNODM92R	1296	269 - 583	3471	Gly-35 to Glu-41.				
HNODP28	HNODP28R	1297	480 - 707	3472					
HNOJA93	HNOJA93R	1298	1 - 453	3473	Gly-13 to Lys-20, Ala-26 to Lys-32, Ala-83 to Leu-88, Gly-128 to Val-135, Phe-142 to Asn-151.				
HNOJB10	HNOJB10R	1299	2 - 391	3474		S0358: 7, L0750: 7, S0360: 6, H0617: 5, S0126: 4, H0545: 3,			

		L0776: 3, S0374: 3, L0748: 3, L0755: 3, L0588: 3, H0422: 3, H0685: 2, H0549: 2, H0550: 2, H0632: 2, H0546: 2, H0424: 2, H0163: 2, H0551: 2, L0665: 2, H0593: 2, H0660: 2, S0330: 2, L0747: 2, L0749: 2, L0777: 2, L0757: 2, S0031: 2, H0556: 1, H0686: 1, H0295: 1, S0430: 1, H0657: 1, H0341: 1, H0662: 1, S0278: 1, H0282: 1, H0592: 1, H0586: 1, H0486: 1, T0039: 1, T0109: 1, H0004: 1, H0581: 1, H0309: 1, H0596: 1, T0110: 1, H0231: 1, H0123: 1, H0620: 1, H0083: 1, H0594: 1, H0687: 1, L0483: 1, H0644: 1, H0361: 1, H0087: 1, H0413: 1, H0059: 1, H0494: 1, S0306: 1, S0440: 1, H0509: 1, H0529: 1, L0762: 1,		

HNOJB57	HNOJB57R	1300	2 - 355	3475	Arg-8 to Gln-18, Thr-24 to Gly-35, Lys-53 to Gly-61, Pro-77 to Cys-82, Pro-103 to Gln-117.	L0770: 1, L0769: 1, L0372: 1, L0764: 1, L0771: 1, L0773: 1, L0775: 1, L0375: 1, L0556: 1, L0655: 1, L0807: 1, L0656: 1, L0659: 1, L0540: 1, L0783: 1, L0384: 1, S0216: 1, H0144: 1, H0691: 1, H0690: 1, H0684: 1, H0658: 1, H0670: 1, H0672: 1, S0328: 1, S0378: 1, S0380: 1, H0518: 1, H0555: 1, S3014: 1, S0032: 1, L0741: 1, H0445: 1, L0596: 1, S0192: 1, S0194: 1, S0460: 1 and H0352: 1.			
HNOJD14	HNOJD14R	1301	2 - 439	3476					
HNOJF20	HNOJF20R	1302	10 - 165	3477	Leu-14 to Arg-20, Ser-29 to Ser-38, Pro-43 to Gly-52.				
HNOJG05	HNOJG05R	1303	288 - 572	3478	Ile-34 to Ala-40.				
HNOJH48	HNOJH48R	1304	2 - 283	3479	Arg-70 to Ser-78.	L0748: 17, L0749: 13,			

		L0666: 9, H0547: 8, L0758: 8, S0358: 7, S0003: 7, L0754: 7, L0485: 7, S0280: 6, H0038: 6, H0521: 6, S3014: 6, L0777: 6, L0755: 6, H0068: 5, L0659: 5, L0665: 5, L0744: 5, L0740: 5, L0591: 5, H0657: 4, H0656: 4, S0116: 4, H0318: 4, H0266: 4, H0687: 4, H0031: 4, H0040: 4, S0002: 4, S0206: 4, L0752: 4, H0445: 4, H0542: 4, H0423: 4, H0497: 3, H0013: 3, H0427: 3, H0046: 3, H0014: 3, H0615: 3, L0142: 3, S0036: 3, H0090: 3, H0551: 3, S0440: 3, L0662: 3, L0767: 3, H0696: 3, S0027: 3, S0028: 3, L0731: 3, L0362: 3, S0196: 3, H0662: 2, H0638: 2, H0580: 2, S0045: 2, S0222: 2, H0587: 2, H0486: 2, H0706: 2,		

		S0010: 2, S0346: 2, T0048: 2, S0474: 2, H0581: 2, H0428: 2, L0483: 2, H0553: 2, S0366: 2, H0634: 2, H0616: 2, H0412: 2, H0623: 2, L0763: 2, L0637: 2, L0667: 2, L0646: 2, L0768: 2, L0774: 2, L0657: 2, L0663: 2, H0144: 2, S0374: 2, H0520: 2, H0519: 2, S0126: 2, S0328: 2, S0146: 2, H0555: 2, H0436: 2, L0747: 2, L0595: 2, S0026: 2, S0194: 2, H0506: 2, L0600: 2, H0170: 1, H0171: 1, H0556: 1, T0002: 1, H0686: 1, S0114: 1, T0049: 1, S0001: 1, S0282: 1, H0663: 1, H0305: 1, S0356: 1, S0444: 1, H0329: 1, S0046: 1, L0717: 1, H0411: 1, H0550: 1, H0441: 1, H0370: 1, H0600: 1, S0005: 1, H0333: 1, H0331: 1,				

		H0574: 1, T0082: 1, H0122: 1, H0196: 1, H0050: 1, L0471: 1, H0057: 1, H0373: 1, T0010: 1, H0510: 1, H0416: 1, S0318: 1, S0316: 1, S0214: 1, H0644: 1, H0074: 1, H0165: 1, H0168: 1, H0169: 1, H0674: 1, S0364: 1, H0708: 1, H0598: 1, H0135: 1, H0163: 1, H0591: 1, H0264: 1, H0272: 1, H0488: 1, H0413: 1, H0056: 1, S0386: 1, L0370: 1, T0041: 1, S0014: 1, H0131: 1, H0130: 1, H0647: 1, S0344: 1, S0422: 1, L0598: 1, L0640: 1, L0770: 1, L0769: 1, L0761: 1, L0772: 1, L0643: 1, L0771: 1, L0773: 1, L0766: 1, L0775: 1, L0375: 1, L0651: 1, L0806: 1, L0653: 1, L0776: 1, L0655: 1, L0656: 1, L0809: 1, L0790: 1,				

					L0791: 1, L0664: 1, H0691: 1, H0689: 1, H0683: 1, H0435: 1, H0660: 1, H0648: 1, H0672: 1, H0539: 1, S0380: 1, H0710: 1, S0152: 1, S0013: 1, S0174: 1, H0478: 1, L0743: 1, L0750: 1, L0757: 1, S0031: 1, H0707: 1, L0588: 1, L0592: 1, L0599: 1, L0608: 1, L0604: 1, L0593: 1, H0668: 1, H0667: 1, S0192: 1, S0276: 1, H0422: 1, H0352: 1 and H0712: 1.		
HNOJH52	HNOJH52R	1305	3 - 200	3480				
HNOJI82	HNOJI82R	1306	1 - 489	3481	Lys-36 to Gln-48, Gln-56 to Ser-72, Gly-82 to Val-105, Lys-114 to Lys-120, Ser-122 to Cys-133.			
HNOJI85	HNOJI85R	1307	1 - 552	3482	Ala-1 to Ser-6.		L0754: 5, L0731: 4, L0748: 3, L0750: 3, H0411: 2, H0012: 2, H0687: 2, H0644: 2, L0803: 2, H0550: 1, L0021: 1, H0599: 1, L0022: 1, H0042: 1,	

HNOJJ20	HNOJJ20R	1308	1 - 261	3483	Lys-19 to Asn-25, Pro-61 to Lys-66.	H0575: 1, H0150: 1, H0620: 1, T0003: 1, H0673: 1, L0662: 1, L0650: 1, L0774: 1, L0375: 1, L0807: 1, L0515: 1, L0659: 1, L0666: 1, S0374: 1, H0694: 1, L0747: 1, L0749: 1, L0779: 1 and L0755: 1.		
HNOJJ26	HNOJJ26R	1309	2 - 385	3484				
HNOJK66	HNOJK66R	1310	1 - 462	3485	Ser-27 to Gly-38, Ser-63 to Trp-72, Trp-79 to Asn-84, Arg-133 to Trp-139.	L0588: 14, S0046: 13, S0045: 12, T0049: 7, H0599: 7, L0662: 7, L0599: 7, H0427: 6, T0048: 6, H0575: 5, L0747: 5, H0254: 4, H0618: 4, H0617: 4, H0124: 4, H0413: 4, H0052: 3, H0024: 3, H0553: 3, H0269: 3, H0412: 3, H0056: 3, H0623: 3, L0764: 3, L0659: 3, L0809: 3, L0666: 3, L0750: 3, L0758: 3, L0600: 3, S0001: 2, H0255: 2, H0661: 2, H0619: 2,		

		S6022: 2, H0587: 2, S0280: 2, H0253: 2, H0150: 2, H0050: 2, H0188: 2, H0644: 2, S0364: 2, S0036: 2, L0369: 2, L0768: 2, L0803: 2, L0775: 2, L0375: 2, L0783: 2, L0438: 2, L0743: 2, L0748: 2, L0439: 2, L0779: 2, L0604: 2, S6024: 1, L0785: 1, S0360: 1, H0208: 1, L0717: 1, H0437: 1, H0369: 1, H0549: 1, H0042: 1, H0309: 1, H0085: 1, H0263: 1, H0123: 1, S0050: 1, L0163: 1, H0266: 1, H0687: 1, H0039: 1, H0622: 1, H0030: 1, H0031: 1, H0163: 1, H0616: 1, H0063: 1, H0264: 1, H0268: 1, L0763: 1, L0536: 1, L0769: 1, L0638: 1, L0643: 1, L0648: 1, L0794: 1, L0804: 1, L0774: 1, L0651: 1, L0378: 1, L0806: 1,			

HNOJL59	HNOJL59R	1311	204 - 479	3486	Glu-1 to Ser-9, Pro-60 to Gln-66.	L0555: 1, L0634: 1, L0788: 1, L0663: 1, L0665: 1, S0044: 1, S0190: 1, L0744: 1, L0749: 1, L0731: 1, H0445: 1, L0589: 1, L0361: 1, L0366: 1 and S0458: 1.		
HNOJM64	HNOJM64R	1312	3 - 428	3487	Gly-105 to Glu-110, Ala-133 to Tyr-142.			
HNOJO55	HNOJO55R	1313	426 - 265	3488				
HNOJP42	HNOJP42R	1314	12 - 302	3489	Trp-42 to Glu-50.			
HNOJQ22	HNOJQ22R	1315	1 - 510	3490	Phe-164 to Leu-170.			
HNOKA20	HNOKA20R	1316	2 - 268	3491	Gln-30 to Gly-36, Lys-43 to Lys-54, Thr-73 to Ile-79.			
HNOKD74	HNOKD74R	1317	2 - 85	3492				
HNOKG34	HNOKG34R	1318	1 - 510	3493	Lys-17 to Leu-27, Thr-39 to Leu-44, Asp-62 to Gly-70, Arg-89 to Asp-94, Arg-102 to Gly-113, Lys-127 to Glu-132, Thr-152 to Arg-160.			
HNOKG69	HNOKG69R	1319	188 - 418	3494				
HNOKG71	HNOKG71R	1320	2 - 331	3495	Gly-8 to Ala-15, Leu-33 to His-50,			

HNOKH94	HNOKH94R	1321	214 - 411	3496	Phe-59 to Gly-64, Gly-70 to Gly-84.	Thr-20 to Asp-27, His-39 to Thr-44.	L0666: 11, S0358: 8, L0752: 8, L0749: 5, L0362: 5, L0771: 4, L0803: 4, L0528: 4, L0664: 4, L0740: 4, L0754: 4, L0599: 4, L0769: 3, L0662: 3, L0657: 3, L0659: 3, L0663: 3, L0748: 3, L0750: 3, L0757: 3, L0758: 3, H0171: 2, S0360: 2, H0574: 2, H0251: 2, L0483: 2, H0412: 2, H0509: 2, L0770: 2, L0774: 2, L0775: 2, L0665: 2, H0690: 2, S0330: 2, L0755: 2, L0731: 2, L0595: 2, H0624: 1, H0170: 1, H0685: 1, H0656: 1, H0663: 1, H0305: 1, H0589: 1, S0356: 1, S0354: 1, H0580: 1, S0132: 1, S0300: 1, L0717: 1, H0331: 1, H0013: 1, H0108: 1, L0105: 1, H0052: 1, H0546: 1,		

					H0123: 1, H0024: 1, H0373: 1, H0266: 1, H0687: 1, L0142: 1, H0628: 1, H0673: 1, H0598: 1, H0038: 1, H0529: 1, L0763: 1, L0637: 1, L0761: 1, L0646: 1, L0641: 1, L0768: 1, L0804: 1, L0650: 1, L0776: 1, L0656: 1, L0526: 1, L0367: 1, S0374: 1, H0691: 1, H0519: 1, H0682: 1, H0684: 1, H0648: 1, L0602: 1, S0454: 1, L0439: 1, L0747: 1, L0779: 1, L0780: 1, L0753: 1, L0759: 1, S0434: 1, L0591: 1, L0592: 1, L0608: 1, L0366: 1, S0194: 1 and H0542: 1.		
HNOKI06	HNOKI06R	1322	3 - 419	3497	Asp-36 to Glu-46, Gln-52 to Ile-61, Leu-76 to Lys-87, Asn-100 to Val-108, Ser-120 to Gln-128.	S0410: 13, L0766: 5, H0657: 4, S0422: 4, H0547: 4, S0408: 3, L0758: 3, S0444: 2, H0587: 2, H0486: 2, H0013: 2, H0581: 2, L0471: 2, L0764: 2, L0794: 2, L0666: 2,		

HNOKI89	HNOKI89R	1323	2 - 370	3498	Glu-1 to Pro-7, Asp-25 to Leu-31, Arg-54 to Lys-73.	L0663: 2, H0520: 2, H0660: 2, H0436: 2, L0740: 2, L0751: 2, H0445: 2, S0436: 2, S0400: 1, H0351: 1, H0411: 1, H0632: 1, H0575: 1, S0010: 1, H0318: 1, H0596: 1, T0110: 1, H0545: 1, H0046: 1, H0567: 1, H0373: 1, S6028: 1, H0687: 1, H0031: 1, H0553: 1, H0617: 1, H0264: 1, S0386: 1, S0440: 1, H0646: 1, L0761: 1, L0646: 1, L0771: 1, L0662: 1, L0774: 1, L0805: 1, L0653: 1, L0655: 1, L0664: 1, H0519: 1, H0521: 1, H0478: 1, L0756: 1, L0752: 1, L0759: 1, S0434: 1, L0362: 1, S0192: 1 and H0543: 1.		
HNOKN33	HNOKN33R	1324	57 - 284	3499	Pro-7 to Gly-20.	L0751: 9, H0556: 8, H0617: 8, L0777: 6,			

		L0809: 5, L0741: 5, L0754: 5, L0779: 5, S0222: 4, L0769: 4, L0659: 4, L0438: 4, L0748: 4, H0208: 3, H0052: 3, H0009: 3, S0051: 3, T0010: 3, H0521: 3, L0747: 3, L0731: 3, L0758: 3, S0408: 2, S0476: 2, H0575: 2, H0253: 2, H0545: 2, H0687: 2, H0615: 2, H0181: 2, H0135: 2, H0494: 2, L5566: 2, L0666: 2, L0664: 2, L0565: 2, H0445: 2, S6024: 1, S0134: 1, S0001: 1, S0282: 1, S0400: 1, H0459: 1, S0354: 1, S0360: 1, H0580: 1, S0007: 1, H0639: 1, S0278: 1, H0441: 1, H0370: 1, H0438: 1, S0280: 1, H0036: 1, H0618: 1, S0049: 1, H0196: 1, H0235: 1, H0597: 1, H0231: 1, H0327: 1, H0566: 1, H0024: 1, L0163: 1,					

					H0594: 1, H0424: 1, H0213: 1, H0030: 1, H0031: 1, H0598: 1, H0100: 1, L0351: 1, H0560: 1, H0625: 1, H0561: 1, H0633: 1, S0144: 1, S0002: 1, S0426: 1, L0763: 1, L0770: 1, L0772: 1, L0372: 1, L0645: 1, L0662: 1, L0767: 1, L0651: 1, L0378: 1, L0776: 1, L0657: 1, L0783: 1, L0382: 1, L0663: 1, S0052: 1, H0520: 1, H0547: 1, H0670: 1, S0378: 1, S0380: 1, H0522: 1, H0555: 1, S3014: 1, L0743: 1, L0756: 1, L0753: 1, L0759: 1, S0031: 1, S0434: 1, L0581: 1, L0595: 1, L0366: 1 and H0423: 1.		
HNOK045	HNOKO45R	1325	67 - 171	3500		L0665: 14, L0666: 13, L0662: 10, L0659: 10, L0646: 9, L0655: 7, L0663: 7, H0648: 7, L0775: 6, L0717: 5, L0657: 5, H0436: 5,	

		L0756: 5, L0731: 5, L0766: 4, L0748: 4, S0212: 3, L0598: 3, L0637: 3, L0761: 3, L0664: 3, H0658: 3, L0742: 3, L0439: 3, L0747: 3, L0750: 3, L0755: 3, L0758: 3, L0604: 3, L0595: 3, H0686: 2, L0002: 2, S0376: 2, S0360: 2, S6026: 2, H0351: 2, S0222: 2, H0455: 2, L0471: 2, H0014: 2, T0006: 2, S0440: 2, S0422: 2, L0667: 2, L0641: 2, L0764: 2, L0768: 2, L0774: 2, L0776: 2, L0527: 2, L0636: 2, L0783: 2, S0374: 2, H0539: 2, L0749: 2, L0596: 2, L0589: 2, L0591: 2, L0592: 2, L0599: 2, L0594: 2, L0362: 2, H0170: 1, S0218: 1, H0657: 1, H0656: 1, L0808: 1, S0400: 1, H0402: 1, S0442: 1, S0444: 1, S0408: 1,				

H0549: 1, H0441: 1, H0415: 1, H0587: 1, L0622: 1, H0486: 1, T0039: 1, H0156: 1, H0318: 1, H0173: 1, H0196: 1, H0597: 1, L0041: 1, H0011: 1, H0057: 1, H0373: 1, H0051: 1, S0051: 1, T0010: 1, H0399: 1, H0061: 1, H0687: 1, H0328: 1, L0055: 1, H0673: 1, H0551: 1, H0413: 1, T0041: 1, H0649: 1, UNKWN: 1, L0762: 1, L0763: 1, L0371: 1, L0769: 1, L0373: 1, L0521: 1, L0364: 1, L0649: 1, L0803: 1, L0650: 1, L0378: 1, L0653: 1, L0606: 1, L0607: 1, L0661: 1, L0512: 1, L0656: 1, L4669: 1, L0517: 1, L0526: 1, L0809: 1, L0647: 1, L2269: 1, L0438: 1, H0519: 1, H0659: 1, H0660: 1, H0651: 1, S0328: 1, S0380: 1,							

HNOKT24	HNOKT24R	1326	98 - 457	3501	Lys-1 to Glu-6, Pro-8 to Gln-21, Ser-43 to Glu-51, Val-61 to Gly-68, Arg-75 to Pro-87, Ser-92 to Phe-98.	H0710: 1, H0579: 1, S0404: 1, S0406: 1, L0740: 1, L0754: 1, L0777: 1, L0759: 1, S0308: 1, L0605: 1, L0581: 1, L0608: 1, L0601: 1, H0543: 1, S0412: 1, S0424: 1 and H0506: 1.		
HNOKU52	HNOKU52R	1327	3 - 509	3502	Lys-13 to Ser-41, Lys-57 to Lys-66, Lys-89 to Lys-97, Lys-113 to Ala-118, Pro-131 to Ala-147, Ala-159 to Ala-169.			
HNOKV82	HNOKV82R	1328	3 - 488	3503	Lys-24 to Lys-31, Gly-132 to Glu-137.			
HNOKZ03	HNOKZ03R	1329	216 - 401	3504		H0624: 10, S0192: 8, S0022: 7, S0212: 5, H0031: 4, H0412: 4, S0028: 4, L0747: 4, S0194: 4, H0717: 3, H0427: 3, L0471: 3, S0250: 3, H0039: 3,		

		H0644: 3, H0040: 3, H0059: 3, H0144: 3, H0547: 3, S0126: 3, S0037: 3, S0027: 3, S0206: 3, L0439: 3, H0713: 2, H0661: 2, S0360: 2, H0208: 2, S0045: 2, S0046: 2, H0587: 2, H0486: 2, H0575: 2, H0024: 2, H0266: 2, H0622: 2, H0551: 2, S0210: 2, H0520: 2, L0740: 2, L0731: 2, L0605: 2, H0170: 1, H0171: 1, S0040: 1, H0716: 1, H0294: 1, S0116: 1, S0420: 1, S0442: 1, H0619: 1, S0300: 1, H0592: 1, H0586: 1, H0485: 1, H0156: 1, H0590: 1, S0474: 1, S0049: 1, H0596: 1, H0544: 1, H0045: 1, H0012: 1, H0620: 1, H0014: 1, T0010: 1, H0687: 1, S0003: 1, H0615: 1, H0030: 1, S0364: 1, S0366: 1, H0090: 1, H0038: 1,				

					H0272: 1, H0334: 1, S0150: 1, L0598: 1, L0767: 1, L0766: 1, L0791: 1, L0792: 1, L0665: 1, T0068: 1, L0438: 1, H0660: 1, S3014: 1, L0744: 1, L0754: 1, L0749: 1, L0757: 1, L0759: 1, L0588: 1, L0589: 1, L0591: 1, L0592: 1, S0011: 1, H0665: 1, H0667: 1 and H0506: 1.		
HNORA56	HNORA56R	1330	2 - 595	3505	Leu-24 to Thr-39, Gln-70 to Glu-81, Arg-86 to Leu-98, Glu-104 to Pro-110, Pro-134 to Arg-157, Val-159 to Asn-166.			
HNORB68	HNORB68R	1331	1 - 210	3506	Gly-1 to Ser-22, Pro-29 to Lys-70.			
HNORC14	HNORC14R	1332	2 - 499	3507		S0412: 22, L0662: 19, L0777: 14, S0010: 11, S0222: 9, S6028: 9, L0750: 9, T0010: 8, L0659: 8, L0747: 8, L0756: 8, L0663: 7, L0439: 7, H0051: 6, L0518: 6, L0754: 6, L0752: 6, S0280: 5,		

		H0575: 5, S0358: 4, S0346: 4, L0753: 4, H0170: 3, H0662: 3, S0360: 3, H0427: 3, L0471: 3, H0373: 3, L0638: 3, L0637: 3, L0764: 3, L0774: 3, L0809: 3, L0666: 3, S0310: 3, H0672: 3, H0696: 3, L0731: 3, H0506: 3, H0713: 2, S0408: 2, H0411: 2, H0455: 2, H0574: 2, S0414: 2, H0486: 2, H0036: 2, S0049: 2, H0052: 2, H0327: 2, H0687: 2, H0428: 2, H0553: 2, H0644: 2, H0038: 2, L0520: 2, L0762: 2, L0770: 2, L0653: 2, L0517: 2, S0044: 2, L0442: 1, H0583: 1, L0443: 1, S0110: 1, S0282: 1, S0400: 1, H0661: 1, S0348: 1, S0356: 1, S0444: 1, H0329: 1, S0007: 1, H0619: 1, S6026: 1, S0300: 1, L0717: 1, S6022: 1,			

		H0550: 1, H0592: 1, H0587: 1, H0599: 1, H0042: 1, H0590: 1, H0318: 1, H0309: 1, H0545: 1, H0563: 1, H0564: 1, H0123: 1, H0019: 1, S0050: 1, L0163: 1, S0388: 1, H0356: 1, H0328: 1, H0688: 1, H0039: 1, T0023: 1, H0031: 1, H0111: 1, H0169: 1, S0364: 1, L0455: 1, H0135: 1, H0163: 1, T0067: 1, T0069: 1, T0004: 1, H0100: 1, S0112: 1, L0370: 1, L0598: 1, L0769: 1, L0630: 1, L0800: 1, L0648: 1, L0363: 1, L0768: 1, L0649: 1, L0803: 1, L0775: 1, L0375: 1, L0651: 1, L0784: 1, L0523: 1, L0805: 1, L0776: 1, L0527: 1, L0657: 1, L0635: 1, L0783: 1, L0789: 1, L0532: 1, L0664: 1, H0691: 1, T0068: 1, S0148: 1,			

						H0693: 1, H0520: 1, H0593: 1, H0689: 1, H0684: 1, S0330: 1, S0380: 1, S0174: 1, H0555: 1, L0612: 1, L0743: 1, L0748: 1, L0751: 1, L0749: 1, L0779: 1, L0759: 1, L0689: 1, S0434: 1, L0604: 1, L0366: 1, S0106: 1 and S0021: 1.		
HNORD11	HNORD11R	1333	155 - 430	3508					
HNORE65	HNORE65R	1334	2 - 436	3509	Ala-24 to Lys-29, Lys-51 to Gly-62.	H0585: 20, H0641: 14, H0521: 9, H0141: 5, H0031: 5, H0422: 5, H0644: 4, L0755: 4, H0295: 3, H0638: 3, S0376: 3, H0544: 3, S0440: 3, H0689: 3, H0690: 3, L0757: 3, H0657: 2, S0360: 2, H0586: 2, H0581: 2, H0063: 2, S0144: 2, L0662: 2, H0691: 2, H0520: 2, S0126: 2, H0522: 2, L0740: 2, L0777: 2, H0423: 2, S0298: 1, H0306: 1, S0132: 1, S0278: 1, H0549: 1, S0222: 1,		

					H0587: 1, H0333: 1, H0575: 1, H0706: 1, H0052: 1, H0309: 1, H0596: 1, H0546: 1, H0545: 1, H0086: 1, H0009: 1, H0284: 1, T0023: 1, L0143: 1, H0551: 1, H0494: 1, S0438: 1, S0002: 1, L0371: 1, L0770: 1, L0769: 1, L0667: 1, L0372: 1, L0646: 1, L0553: 1, L0771: 1, L0774: 1, L0375: 1, L0806: 1, L0382: 1, H0703: 1, H0593: 1, H0682: 1, S0328: 1, S0380: 1, H0555: 1, S0027: 1, L0742: 1, L0747: 1, L0779: 1, L0753: 1, H0445: 1 and H0543: 1.		
HNORF03	HNORF03R	1335	37 - 387	3510	Pro-19 to His-36, Glu-68 to Ala-86.	L0439: 6, L0794: 2, L0665: 2, H0691: 2, L0717: 1, H0068: 1, L0761: 1, L0646: 1, L0773: 1, L0662: 1, L0790: 1, L0663: 1, L0438: 1, L0748: 1, L0758: 1, L0592: 1 and		

HNORF04	HNORF04R	1336	1 - 168	3511			L0608: 1.		
HNORF05	HNORF05R	1337	2 - 334	3512	Thr-2 to Phe-7, Gly-18 to Arg-23, Asp-27 to Glu-35.				
HNORF13	HNORF13R	1338	1 - 636	3513	Gly-1 to Thr-10.				
HNORH03	HNORH03R	1339	3 - 680	3514			S0358: 7, L0750: 7, S0360: 6, H0617: 5, S0126: 4, H0545: 3, L0776: 3, S0374: 3, L0748: 3, L0755: 3, L0588: 3, H0422: 3, H0685: 2, H0549: 2, H0550: 2, H0632: 2, H0546: 2, H0424: 2, H0163: 2, H0551: 2, L0665: 2, H0593: 2, H0660: 2, S0330: 2, L0747: 2, L0749: 2, L0777: 2, L0757: 2, S0031: 2, H0556: 1, H0686: 1, H0295: 1, S0430: 1, H0657: 1, H0341: 1, H0662: 1, S0278: 1, H0282: 1, H0592: 1, H0586: 1, H0486: 1, T0039: 1, T0109: 1, H0004: 1, H0581: 1, H0309: 1, H0596: 1, T0110: 1,		

HNORH05	HNORH05R	1340	1 - 498	3515	Arg-13 to Arg-21, Asp-26 to Pro-35,	H0231: 1, H0123: 1, H0620: 1, H0083: 1, H0594: 1, H0687: 1, L0483: 1, H0644: 1, H0361: 1, H0087: 1, H0413: 1, H0059: 1, H0494: 1, S0306: 1, S0440: 1, H0509: 1, H0529: 1, L0762: 1, L0770: 1, L0769: 1, L0372: 1, L0764: 1, L0771: 1, L0773: 1, L0775: 1, L0375: 1, L0556: 1, L0655: 1, L0807: 1, L0656: 1, L0659: 1, L0540: 1, L0783: 1, L0384: 1, S0216: 1, H0144: 1, H0691: 1, H0690: 1, H0684: 1, H0658: 1, H0670: 1, H0672: 1, S0328: 1, S0378: 1, S0380: 1, H0518: 1, H0555: 1, S3014: 1, S0032: 1, L0741: 1, H0445: 1, L0596: 1, S0192: 1, S0194: 1, S0460: 1 and H0352: 1.		

					Glu-58 to Gly-65, Ser-74 to Pro-82, Gln-107 to Asp-115, Asp-128 to Asn-137, Gln-145 to Arg-154, Gln-161 to Ser-166.			
HNORH35	HNORH35R	1341	20 - 244	3516	Ala-19 to Ser-27, Ser-41 to Val-53.			
HNORJ08	HNORJ08R	1342	3 - 377	3517	Asn-95 to Leu-100.			
HNTRB70	HNTRB70R	1343	144 - 377	3518	Pro-3 to Ile-12, Asn-20 to Glu-25.			
HOCMA02	HOCMA02RA	1344	3 - 530	3519	Ile-121 to Val-129, Ala-136 to Glu-142.	L0742: 10, H0144: 6, H0265: 5, S0116: 4, S0046: 4, S0222: 4, H0556: 3, H0250: 3, H0052: 3, S0027: 3, L0595: 3, S0212: 2, H0306: 2, S0358: 2, H0013: 2, H0618: 2, H0124: 2, H0100: 2, S0053: 2, H0660: 2, S0330: 2, S3012: 2, L0748: 2, L0439: 2, L0745: 2, L0757: 2, H0445: 2, S0342: 1, H0484: 1, H0638: 1, S0007: 1, H0393: 1, H0437: 1, H0549: 1, H0438: 1, H0486: 1,		

						H0253: 1, H0390: 1, H0544: 1, H0046: 1, H0009: 1, H0023: 1, N0007: 1, T0010: 1, H0188: 1, H0687: 1, S0003: 1, H0030: 1, S0364: 1, L0455: 1, S0366: 1, H0090: 1, H0038: 1, H0551: 1, H0412: 1, H0059: 1, S0038: 1, H0130: 1, H0641: 1, S0142: 1, S0002: 1, H0517: 1, L0643: 1, L0771: 1, L0794: 1, L0766: 1, L0775: 1, L0654: 1, L0655: 1, L0352: 1, S0008: 1, H0435: 1, H0659: 1, H0658: 1, H0672: 1, H0521: 1, H0522: 1, S0044: 1, H0576: 1, L0779: 1, L0605: 1, L0593: 1, S0026: 1, H0667: 1, S0276: 1, S0196: 1, H0542: 1, H0423: 1 and H0506: 1.		
HOCMB45	HOCMB45RA	1345	347 - 541	3520	Asn-39 to Gln-44, Leu-47 to Asp-55.	L0439: 17, L0438: 6, H0424: 5, S0007: 4, L0769: 4, H0213: 3,			

						L0776: 3, H0660: 3, H0309: 2, S0051: 2, L0789: 2, L0663: 2, L0750: 2, L0757: 2, L0759: 2, S0196: 2, S0040: 1, S0001: 1, H0662: 1, H0402: 1, L0005: 1, S0356: 1, H0052: 1, H0596: 1, H0009: 1, T0010: 1, L0483: 1, T0006: 1, H0033: 1, H0031: 1, H0169: 1, H0634: 1, H0538: 1, L0638: 1, L0643: 1, L0764: 1, L0768: 1, L0803: 1, L0804: 1, L0375: 1, L0606: 1, L0659: 1, L0791: 1, L0352: 1, H0547: 1, L0602: 1, H0436: 1, L0742: 1, L0749: 1, L0777: 1, L0752: 1, L0731: 1, L0758: 1, S0394: 1, L0596: 1 and S0412: 1.		
HOCMB65	HOCMB65RA	1346	241 - 456	3521					
HOCMC08	HOCMC08R	1347	1 - 426	3522	Lys-18 to Tyr-31, Ile-45 to Asp-50, Trp-78 to Ser-88,				

					Pro-102 to Pro-109.			
HOCMF06	HOCMF06R	1348	382 - 588	3523				
HOCMF27	HOCMF27R	1349	3 - 395	3524	Glu-1 to Ile-6, Asp-125 to Pro-131.	L0748: 26, H0046: 18, H0510: 7, H0673: 7, L0803: 7, H0169: 6, H0144: 6, L0731: 4, H0574: 3, H0521: 3, H0370: 2, H0615: 2, H0032: 2, T0067: 2, H0509: 2, S0210: 2, L0776: 2, L0749: 2, L0750: 2, L0595: 2, H0170: 1, H0656: 1, H0341: 1, H0151: 1, S0046: 1, S0132: 1, H0619: 1, H0351: 1, S0222: 1, H0497: 1, H0632: 1, H0486: 1, H0156: 1, H0575: 1, H0052: 1, H0596: 1, H0057: 1, H0014: 1, H0355: 1, H0286: 1, H0622: 1, H0165: 1, H0674: 1, H0212: 1, H0038: 1, H0379: 1, H0059: 1, T0041: 1, S0448: 1, H0132: 1, S0150: 1, L0646: 1, L0774: 1, L0527: 1, L0657: 1, L0809: 1,		

						L0519: 1, L0788: 1, L0789: 1, L0666: 1, H0520: 1, H0519: 1, H0658: 1, H0660: 1, S0152: 1, S0013: 1, H0696: 1, S0044: 1, S0174: 1, S0146: 1, H0479: 1, L0744: 1, L0777: 1, L0758: 1, L0581: 1, L0608: 1, L0593: 1 and H0136: 1.		
HOCMF50	HOCMF50RB	1350	49 - 354	3525	Gly-2 to Lys-9, Arg-21 to Glu-32, Pro-58 to Lys-64, Thr-73 to Glu-83.	H0687: 1, L0663: 1 and H0660: 1.		
HOCMF54	HOCMF54R	1351	37 - 285	3526	Lys-1 to Thr-6, Ala-26 to Gly-36, Ser-47 to Gln-55, Leu-72 to Cys-83.	L0794: 7, L0666: 4, L0750: 3, L0664: 2, L0665: 2, H0670: 2, H0660: 2, L0439: 2, L0751: 2, L0756: 2, H0650: 1, H0150: 1, L0769: 1, L0803: 1, L0378: 1, L0657: 1, H0684: 1 and H0555: 1.		
HOCMG37	HOCMG37R	1352	1 - 456	3527	Gly-1 to Asn-9, Glu-31 to Val-39.	H0657: 13, S0360: 12, S0026: 7, H0547: 6, H0171: 4, S0356: 4, H0551: 4, H0560: 4, H0509: 4, H0689: 4, H0543: 4, S0358: 3,		

		H0318: 3, S0440: 3, H0529: 3, H0435: 3, H0665: 3, H0170: 2, H0265: 2, H0556: 2, H0222: 2, S0376: 2, L0717: 2, H0642: 2, H0574: 2, H0575: 2, H0596: 2, S0003: 2, H0615: 2, H0428: 2, H0617: 2, H0413: 2, H0494: 2, H0646: 2, L0369: 2, H0144: 2, H0520: 2, H0519: 2, H0690: 2, H0658: 2, H0660: 2, H0672: 2, L0362: 2, H0542: 2, H0423: 2, H0686: 1, H0650: 1, H0656: 1, S0212: 1, S0029: 1, H0483: 1, H0663: 1, H0664: 1, H0638: 1, S0420: 1, H0580: 1, S0278: 1, H0261: 1, H0438: 1, H0586: 1, T0060: 1, H0069: 1, S0010: 1, H0263: 1, H0327: 1, H0546: 1, H0014: 1, H0083: 1, H0510: 1, S6028: 1, H0266: 1, S0214: 1,				

						H0553: 1, H0068: 1, H0090: 1, H0040: 1, H0634: 1, T0067: 1, H0079: 1, H0561: 1, L0065: 1, H0130: 1, H0647: 1, S0422: 1, L0772: 1, L0648: 1, L0662: 1, L0768: 1, L0375: 1, L0657: 1, L0659: 1, L0518: 1, S0310: 1, L0438: 1, H0670: 1, H0648: 1, S0380: 1, H0521: 1, H0436: 1, L0439: 1, L0749: 1, L0756: 1, L0779: 1, L0731: 1, H0343: 1, L0596: 1, L0588: 1, L0590: 1, L0591: 1, L0603: 1, H0653: 1, S0196: 1, H0422: 1, S0424: 1, S0384: 1 and H0506: 1.		
HOCMI62	HOCMI62R	1353	49 - 348	3528					
HOCMJ47	HOCMJ47R	1354	1 - 510	3529	Lys-23 to Ser-29, Tyr-55 to His-62, Tyr-65 to Leu-71.				
HOCMK20	HOCMK20R	1355	14 - 400	3530	Glu-32 to Ser-38.				
HOCML06	HOCML06R	1356	3 - 707	3531	Gly-1 to Arg-9.				
HOCML66	HOCML66R	1357	2 - 289	3532				L0748: 2, S6028: 1, H0682: 1, H0660: 1,	

						S0378: 1 and H0506: 1.			
HOCMM52	HOCMM52R	1358	130 - 594	3533	Thr-19 to Cys-25, Lys-133 to Ala-138.				
HOCMO50	HOCMO50R	1359	3 - 425	3534					
HOCMS75	HOCMS75R	1360	3 - 500	3535		H0295: 8, H0617: 7, L0665: 7, H0435: 7, H0592: 6, H0494: 6, L0439: 6, L0751: 6, S0360: 5, S0046: 4, H0587: 4, H0012: 4, H0264: 4, L0662: 4, S0406: 4, H0586: 3, H0620: 3, H0031: 3, H0551: 3, S0440: 3, S0002: 3, L0763: 3, L0648: 3, L0649: 3, L0774: 3, L0659: 3, H0520: 3, H0547: 3, H0689: 3, H0660: 3, S0328: 3, S0330: 3, L0748: 3, L0754: 3, L0750: 3, H0294: 2, H0650: 2, H0341: 2, S0356: 2, S0132: 2, H0370: 2, H0333: 2, H0643: 2, L0623: 2, H0706: 2, H0081: 2, H0039: 2, H0553: 2, H0181: 2, H0068: 2, H0135: 2, H0040: 2,			

		H0646: 2, L0640: 2, L0637: 2, L0641: 2, L0764: 2, L0804: 2, L0806: 2, L0776: 2, L0657: 2, L0809: 2, L0664: 2, H0519: 2, H0682: 2, H0670: 2, H0672: 2, L0744: 2, L0740: 2, S0434: 2, H0677: 2, H0483: 1, H0305: 1, H0638: 1, S0442: 1, S0358: 1, S0376: 1, S0410: 1, H0411: 1, H0550: 1, H0455: 1, H0600: 1, H0101: 1, H0575: 1, H0590: 1, H0618: 1, H0052: 1, H0234: 1, H0597: 1, H0121: 1, L0041: 1, H0123: 1, H0246: 1, H0290: 1, H0292: 1, H0428: 1, H0622: 1, T0023: 1, H0030: 1, H0316: 1, H0059: 1, H0100: 1, S0306: 1, T0090: 1, H0649: 1, S0210: 1, S0426: 1, L0646: 1, L0765: 1, L0771: 1, L0626: 1, L0768: 1,				

					L0364: 1, L0766: 1, L0375: 1, L0651: 1, L0378: 1, L0653: 1, L0655: 1, L0558: 1, L0635: 1, L0518: 1, L0383: 1, L0792: 1, L0663: 1, S0006: 1, H0696: 1, S0044: 1, S3014: 1, L0743: 1, L0752: 1, L0755: 1, L0731: 1, L0759: 1, H0216: 1, H0543: 1, S0424: 1 and H0506: 1.		
HOCMS87	HOCMS87R	1361	145 - 636	3536	Pro-84 to Pro-91.	L0743: 9, H0551: 5, H0645: 4, H0050: 4, S0250: 4, S0192: 4, H0624: 3, T0039: 3, H0087: 3, H0547: 3, L0439: 3, H0294: 2, H0370: 2, T0040: 2, H0620: 2, H0024: 2, H0622: 2, H0424: 2, H0031: 2, H0063: 2, L0662: 2, L0776: 2, S0028: 2, L0757: 2, S0242: 2, S0116: 1, H0484: 1, H0483: 1, S0360: 1, H0619: 1, H0550: 1, H0586: 1, H0497: 1, H0486: 1,		

						H0599: 1, H0575: 1, H0122: 1, H0706: 1, H0421: 1, S0049: 1, H0086: 1, H0123: 1, H0081: 1, H0012: 1, H0687: 1, H0028: 1, H0604: 1, S0386: 1, L0772: 1, L0648: 1, L0803: 1, L0774: 1, L0375: 1, L0789: 1, L0532: 1, L0663: 1, T0068: 1, S0126: 1, H0684: 1, H0660: 1, S0152: 1, S0027: 1, L0747: 1, L0749: 1, L0779: 1, L0777: 1, S0194: 1 and H0506: 1.		
HOCMX29	HOCMX29R	1362	86 - 235	3537					
HOCMY53	HOCMY53R	1363	76 - 354	3538	Glu-1 to Gly-6, Leu-27 to Val-40, Glu-60 to Asn-67.				
HOCMY61	HOCMY61R	1364	2 - 466	3539					
HOCMY79	HOCMY79R	1365	314 - 511	3540	Gly-17 to Arg-42, Phe-56 to Ser-66.				
HOCOC38	HOCOC38R	1366	394 - 2	3541					
HOCOC41	HOCOC41R	1367	520 - 789	3542	Lys-1 to His-6.				
HOCOC94	HOCOC94R	1368	3 - 488	3543	Lys-7 to Glu-13, Gly-39 to Thr-44, Gly-82 to Ile-89, Glu-98 to Asn-105.	L0777: 14, L0731: 10, L0740: 8, L0439: 7, L0754: 6, S0222: 5, H0144: 5, L0745: 5,			

		H0013: 4, L0770: 4, S0380: 4, L0748: 4, L0758: 4, H0171: 3, H0599: 3, S0010: 3, H0052: 3, S0003: 3, H0615: 3, L0598: 3, L0666: 3, L0665: 3, H0519: 3, H0658: 3, L0749: 3, H0255: 2, S0376: 2, S0444: 2, S0360: 2, H0632: 2, H0327: 2, S0214: 2, H0038: 2, H0040: 2, L0769: 2, L0638: 2, L0662: 2, L0794: 2, L0775: 2, L0776: 2, H0660: 2, S0330: 2, L0744: 2, L0750: 2, L0756: 2, L0757: 2, L0362: 2, L0361: 2, H0170: 1, H0685: 1, S0040: 1, S0342: 1, H0716: 1, S0001: 1, S0282: 1, H0662: 1, S0356: 1, S0358: 1, H0675: 1, S0408: 1, H0580: 1, S0300: 1, H0406: 1, S0278: 1, H0550: 1, H0441: 1, H0431: 1, H0600: 1,				

		H0331: 1, H0574: 1, T0039: 1, H0156: 1, S0665: 1, S0346: 1, H0263: 1, H0596: 1, H0546: 1, H0150: 1, H0009: 1, H0569: 1, L0471: 1, H0012: 1, H0051: 1, S0051: 1, T0010: 1, H0266: 1, S0250: 1, S0022: 1, H0428: 1, H0119: 1, H0553: 1, H0628: 1, H0617: 1, H0316: 1, H0634: 1, H0412: 1, H0413: 1, H0623: 1, H0494: 1, S0450: 1, H0130: 1, S0142: 1, UNKWN: 1, L0771: 1, L0766: 1, L0803: 1, L0804: 1, L0774: 1, L0784: 1, L0805: 1, L0652: 1, L0653: 1, L0655: 1, L0606: 1, L0527: 1, L0783: 1, L0663: 1, H0547: 1, H0689: 1, H0670: 1, H0648: 1, H0539: 1, H0521: 1, H0696: 1, H0478: 1, S0432: 1, H0540: 1, S0028: 1,			

HOCOF35	HOCOF35R	1369	221 - 502	3544	Pro-6 to Arg-12, Gln-17 to Leu-22, His-25 to Asp-32, Gly-62 to Lys-69.	S0206: 1, L0746: 1, L0747: 1, S0031: 1, L0689: 1, S0436: 1, S0194: 1, S0276: 1, S0412: 1, H0506: 1 and H0352: 1.		
HOCOF50	HOCOF50R	1370	2 - 409	3545	Thr-16 to Phe-28, Cys-58 to Ser-69, Glu-91 to Glu-99, Lys-113 to Gln-119.			
HOCOO62	HOCOO62R	1371	9 - 539	3546	Gln-37 to Trp-44, Arg-47 to Phe-57, Phe-67 to Ala-83, Pro-94 to Gly-99, Lys-109 to Cys-116, Arg-130 to Ser-137.			
HOCOP52	HOCOP52R	1372	2 - 382	3547				
HOCOQ13	HOCOQ13R	1373	46 - 492	3548	Glu-1 to Val-9.	H0521: 5, S0040: 3, H0039: 3, H0657: 2, H0341: 2, H0553: 2, S0210: 2, H0593: 2, H0445: 2, L0596: 2, S0212: 1, H0661: 1, S0418: 1, S0354: 1, S0358: 1, H0592: 1, T0039: 1, H0635: 1,		

						H0427: 1, H0544: 1, H0546: 1, H0545: 1, H0046: 1, L0471: 1, H0083: 1, S6028: 1, S0338: 1, S0003: 1, H0068: 1, H0038: 1, H0063: 1, H0551: 1, H0100: 1, T0042: 1, H0494: 1, H0561: 1, H0646: 1, L0800: 1, L0649: 1, L0654: 1, L0666: 1, H0660: 1, H0518: 1, S0152: 1, S0146: 1, H0555: 1, S0037: 1, S0028: 1, L0605: 1, L0599: 1, L0603: 1, H0667: 1, H0542: 1, H0543: 1, S0424: 1 and H0506: 1.		
HOCOQ93	HOCOQ93R	1374	448 - 639	3549					
HOCOT70	HOCOT70R	1375	2 - 412	3550					
HOCOV29	HOCOV29R	1376	107 - 268	3551	Lys-9 to Asp-16, Thr-27 to Trp-36.				
HOCPF69	HOCPF69R	1377	1 - 573	3552					
HOCPG38	HOCPG38R	1378	1 - 183	3553	Pro-38 to Gln-43.	H0046: 5, H0144: 5, L0665: 4, L0662: 3, L0766: 3, L0750: 3, L0779: 3, L0759: 3, H0170: 2, S0376: 2, H0329: 2, H0427: 2,			

		L0770: 2, L0529: 2, L0439: 2, L0740: 2, L0751: 2, L0758: 2, S0242: 2, H0223: 1, H0685: 1, S0116: 1, S0282: 1, H0662: 1, S6022: 1, H0574: 1, H0486: 1, H0013: 1, H0098: 1, H0575: 1, H0581: 1, H0052: 1, L0471: 1, H0024: 1, H0510: 1, H0594: 1, H0328: 1, H0169: 1, H0598: 1, H0163: 1, H0646: 1, L0637: 1, L0768: 1, L0794: 1, L0804: 1, L0775: 1, L0653: 1, L0659: 1, L0526: 1, L0783: 1, L0809: 1, L0544: 1, L0647: 1, L0666: 1, L0664: 1, S0374: 1, L0438: 1, H0519: 1, H0670: 1, H0660: 1, H0648: 1, S0378: 1, H0696: 1, S0432: 1, L0777: 1, L0755: 1, S0308: 1, L0591: 1, L0608: 1, S0192: 1, S0194: 1, H0543: 1,				

HOCPG48	HOCPG48R	1379	39 - 185	3554			H0423: 1 and S0412: 1.		
HOCPH40	HOCPH40R	1380	2 - 217	3555	Leu-9 to Val-14, Glu-41 to Ala-49.		L0731: 7, S0358: 6, L0439: 6, L0769: 5, L0809: 4, L0747: 4, S0354: 3, H0580: 3, H0438: 3, H0581: 3, L0770: 3, L0766: 3, L0774: 3, L0775: 3, L0740: 3, L0749: 3, L0758: 3, L0596: 3, H0677: 3, H0392: 2, H0457: 2, L0471: 2, H0510: 2, H0169: 2, H0551: 2, T0042: 2, H0494: 2, S0438: 2, L0761: 2, L0657: 2, L0783: 2, L0647: 2, L0666: 2, L0565: 2, L0438: 2, H0521: 2, L0748: 2, L0750: 2, L0779: 2, L0752: 2, L0759: 2, L0588: 2, L0605: 2, L0592: 2, L0581: 2, L0615: 1, S0116: 1, H0638: 1, S0418: 1, S0444: 1, S0360: 1, S0222: 1, H0586: 1, H0427: 1, H0618: 1, H0390: 1,		

HOCPH44	HOCPH44R	1381	3 - 281	3556	Gly-18 to Asp-23, Gln-34 to Gly-40, Asp-81 to Lys-87.	H0318: 1, H0007: 1, H0052: 1, H0544: 1, H0024: 1, H0014: 1, H0083: 1, H0375: 1, S6028: 1, H0266: 1, H0398: 1, L0055: 1, H0135: 1, H0087: 1, S0344: 1, S0426: 1, H0529: 1, L0763: 1, L0639: 1, L0374: 1, L0764: 1, L0662: 1, L0768: 1, L0803: 1, L0378: 1, L0776: 1, L0659: 1, L0518: 1, L0663: 1, L0665: 1, S0374: 1, H0547: 1, H0519: 1, H0593: 1, H0690: 1, H0682: 1, H0660: 1, S0328: 1, H0539: 1, H0555: 1, L0743: 1, L0777: 1, H0445: 1, L0362: 1, S0242: 1 and H0543: 1.		
HOCPI28	HOCPI28R	1382	3 - 245	3557				
HOCPI53	HOCPI53R	1383	2 - 232	3558	Asp-43 to Gly-48.			
HOCPL59	HOCPL59R	1384	285 - 530	3559				
HOCPM39	HOCPM39R	1385	2 - 136	3560				

HOCPP65	HOCPP65R	1386	3 - 275	3561	Ala-2 to Ala-9.	L0747: 10, L0805: 6, S0358: 4, L0775: 4, L0655: 4, L0749: 4, H0656: 3, S0440: 3, L0803: 3, L0776: 3, L0789: 3, H0650: 2, H0662: 2, L0471: 2, H0620: 2, H0169: 2, H0616: 2, L0770: 2, L0769: 2, L0761: 2, L0800: 2, L0794: 2, L0804: 2, L0806: 2, L0657: 2, L0809: 2, L0665: 2, H0547: 2, S0126: 2, H0660: 2, H0648: 2, H0521: 2, S0406: 2, L0748: 2, L0750: 2, L0758: 2, L0581: 2, T0002: 1, H0686: 1, H0657: 1, S0418: 1, S0420: 1, S0356: 1, S0442: 1, S0444: 1, H0574: 1, H0559: 1, H0486: 1, L0586: 1, T0114: 1, H0250: 1, H0318: 1, H0014: 1, H0051: 1, H0266: 1, H0292: 1, H0428: 1, H0031: 1, H0673: 1, H0163: 1,	

						H0591: 1, H0494: 1, L0640: 1, L0763: 1, L0772: 1, L0773: 1, L0521: 1, L0766: 1, L0774: 1, L0375: 1, L0384: 1, L0793: 1, H0144: 1, H0703: 1, S0374: 1, H0593: 1, H0690: 1, H0659: 1, H0658: 1, S0328: 1, S0152: 1, L0744: 1, L0779: 1, L0752: 1, L0755: 1, L0731: 1, L0759: 1, S0026: 1, H0136: 1, H0542: 1 and H0422: 1.		
HOCPP80	HOCPP80R	1387	3 - 587	3562	Glu-16 to Lys-21, Asn-62 to Arg-68, Asp-94 to Thr-102, Gly-161 to Leu-170.			
HOCPQ24	HOCPQ24R	1388	26 - 358	3563				
HOCPQ59	HOCPQ59R	1389	2 - 394	3564	Ser-9 to Glu-16, Phe-49 to Tyr-58, Asn-102 to Gly-110.	L0754: 4, H0290: 2, L0761: 2, L0794: 2, L0766: 2, L0793: 2, L0731: 2, L0758: 2, L0759: 2, L0594: 2, H0713: 1, H0402: 1, S0418: 1, S0354: 1, H0580: 1, L0717: 1, H0550: 1, H0333: 1,		

HOCPQ66	HOCPQ66R	1390	2 - 427	3565	Asp-24 to Leu-31, Ile-123 to Gln-128.	H0643: 1, H0574: 1, S0280: 1, H0618: 1, H0052: 1, H0546: 1, H0545: 1, H0014: 1, H0033: 1, H0100: 1, L5566: 1, L0773: 1, L0521: 1, L0803: 1, L0804: 1, L0807: 1, L0788: 1, H0670: 1, H0660: 1, H0521: 1, S0404: 1, S0406: 1, H0436: 1, L0779: 1, H0543: 1 and H0352: 1.		
HOCPQ75	HOCPQ75R	1391	2 - 487	3566				
HOCPR01	HOCPR01R	1392	3 - 536	3567	Ser-11 to Trp-18, Glu-43 to Leu-50, Phe-99 to Arg-120, Ser-136 to Tyr-144, Glu-154 to Cys-163.			
HOCPR29	HOCPR29R	1393	1 - 588	3568	Gln-14 to Lys-19, Glu-79 to Gly-87.	L0748: 9, H0556: 8, L0769: 5, L0766: 4, L0776: 4, H0547: 4, H0521: 4, L0750: 4, L0752: 4, L0758: 4, S0434: 4, H0542: 4, H0657: 3, S0418: 3, H0586: 3, H0587: 3, H0013: 3, H0052: 3,		

		H0083: 3, H0038: 3, H0634: 3, H0494: 3, S0440: 3, L0774: 3, L0775: 3, L0659: 3, H0522: 3, L0744: 3, L0749: 3, L0755: 3, L0759: 3, H0543: 3, S0358: 2, S0476: 2, H0156: 2, H0194: 2, L0471: 2, H0014: 2, H0201: 2, S0003: 2, T0023: 2, H0135: 2, H0551: 2, S0142: 2, L0372: 2, L0662: 2, L0767: 2, L0381: 2, L0383: 2, L0666: 2, L0665: 2, H0658: 2, H0660: 2, S0044: 2, S3014: 2, L0751: 2, L0754: 2, L0596: 2, L0588: 2, L0591: 2, L0592: 2, L0595: 2, L0601: 2, H0423: 2, S0040: 1, S0134: 1, S0298: 1, H0661: 1, H0664: 1, H0125: 1, S0420: 1, S0356: 1, S0354: 1, S0444: 1, S0360: 1, H0619: 1, H0393: 1, H0549: 1,				

		H0550: 1, S0222: 1, S6014: 1, H0431: 1, H0592: 1, H0574: 1, T0039: 1, T0114: 1, H0075: 1, H0427: 1, H0590: 1, H0004: 1, H0318: 1, H0581: 1, H0251: 1, H0596: 1, T0115: 1, H0009: 1, H0081: 1, H0050: 1, H0024: 1, T0010: 1, H0687: 1, H0288: 1, H0290: 1, H0039: 1, H0622: 1, L0055: 1, H0032: 1, H0090: 1, H0591: 1, H0040: 1, H0063: 1, H0413: 1, T0069: 1, S0438: 1, H0538: 1, S0210: 1, S0426: 1, H0529: 1, L0520: 1, L0762: 1, L0763: 1, L0770: 1, L0374: 1, L0764: 1, L0768: 1, L0386: 1, L0803: 1, L0524: 1, L0806: 1, L0379: 1, L0527: 1, L0657: 1, L0382: 1, L0809: 1, L0788: 1, L0663: 1, S0052: 1, S0374: 1,			

HOCPR33	HOCPR33R	1394	168 - 335	3569		H0691: 1, H0682: 1, H0435: 1, H0659: 1, S0328: 1, S0330: 1, S0152: 1, H0436: 1, L0611: 1, S0027: 1, S0028: 1, L0747: 1, L0779: 1, L0780: 1, L0731: 1, L0608: 1, S0026: 1, H0653: 1, S0192: 1, S0194: 1, H0422: 1 and S0384: 1.		
HOCPR53	HOCPR53R	1395	62 - 256	3570	Glu-22 to Glu-30, Lys-42 to Glu-51.			
HOCPR55	HOCPR55R	1396	3 - 440	3571	Pro-7 to Ser-36, Cys-49 to Pro-57, Pro-85 to Ala-91, Gly-97 to Pro-109.	L0766: 2, H0660: 2, L0748: 2, L0740: 2, H0328: 1, L0769: 1, L0651: 1, L0653: 1, H0593: 1 and S0126: 1.		
HOCPR77	HOCPR77R	1397	1 - 279	3572				
HOCPR82	HOCPR82R	1398	1 - 102	3573				
HOCPS35	HOCPS35R	1399	3 - 203	3574	Tyr-1 to Gly-39, Ala-41 to Tyr-67.			
HOCPU03	HOCPU03R	1400	1 - 225	3575				
HOCPU30	HOCPU30R	1401	333 - 560	3576				
HOCPU68	HOCPU68R	1402	3 - 269	3577	Ser-49 to Asp-56; Arg-64 to Ile-71, Pro-80 to Ile-89.			
HOCPV29	HOCPV29R	1403	339 - 599	3578	His-10 to Asp-20,	H0620: 2, S0022: 2,		

					Asn-27 to Gly-33.	L0438: 2, T0002: 1, H0393: 1, H0370: 1, H0050: 1, H0373: 1, H0051: 1, H0028: 1, S0036: 1, H0551: 1, H0059: 1, S0150: 1, L0662: 1, S0126: 1, H0435: 1, H0660: 1, S0044: 1 and H0694: 1.	
HOCPV67	HOCPV67R	1404	1 - 390	3579		L0803: 7, L0439: 5, L0809: 4, L0749: 4, L0776: 3, H0520: 3, L0748: 3, L0750: 3, H0543: 3, S0440: 2, L0794: 2, L0804: 2, L0438: 2, H0547: 2, H0660: 2, S0406: 2, L0743: 2, L0777: 2, L0759: 2, H0556: 1, H0656: 1, S0358: 1, S0360: 1, H0637: 1, H0580: 1, H0741: 1, H0733: 1, H0619: 1, H0415: 1, H0600: 1, H0587: 1, H0486: 1, H0013: 1, H0427: 1, S0474: 1, H0581: 1, H0263: 1, H0457: 1, H0615: 1, H0428: 1, H0644: 1, H0032: 1,	

					S0036: 1, H0591: 1, H0634: 1, H0264: 1, S0438: 1, S0422: 1, S0002: 1, L0520: 1, L0766: 1, L0649: 1, L0650: 1, L0774: 1, L0775: 1, L0655: 1, L0790: 1, L0666: 1, L0663: 1, H0723: 1, H0593: 1, H0682: 1, H0670: 1, H0521: 1, S0013: 1, H0631: 1, S0206: 1, L0756: 1, L0731: 1, L0608: 1, S0194: 1 and S0424: 1.		
HOCPV72	HOCPV72R	1405	3 - 209	3580				
HOCPW56	HOCPW56R	1406	2 - 502	3581	Ile-53 to Trp-63, Ala-80 to Gly-89, Arg-134 to Gln-139.	L0752: 19, L0747: 12, L0776: 6, L0750: 5, L0608: 5, L0774: 4, L0805: 4, L0438: 4, L0740: 4, S0210: 3, L0600: 3, S0358: 2, S0222: 2, H0068: 2, H0040: 2, H0413: 2, L0770: 2, L0769: 2, L0772: 2, L0794: 2, L0783: 2, L0809: 2, S0328: 2, L0439: 2, L0745: 2, L0755: 2, L0758: 2, L0590: 2,		

		H0170: 1, H0341: 1, H0483: 1, S0420: 1, S0410: 1, S0300: 1, H0411: 1, H0549: 1, L0622: 1, H0013: 1, H0156: 1, S0010: 1, H0052: 1, H0545: 1, N0006: 1, L0471: 1, H0012: 1, S0336: 1, H0428: 1, T0006: 1, H0606: 1, H0674: 1, L0455: 1, S0036: 1, H0038: 1, H0063: 1, H0494: 1, H0560: 1, L0520: 1, L0762: 1, L0521: 1, L0662: 1, L0767: 1, L0803: 1, L0653: 1, L0659: 1, L0790: 1, L0791: 1, L0666: 1, H0144: 1, S0374: 1, H0689: 1, H0690: 1, H0659: 1, H0660: 1, H0648: 1, S0378: 1, H0134: 1, H0214: 1, L0749: 1, L0731: 1, L0361: 1, S0106: 1, S0011: 1, H0653: 1, S0192: 1, S0242: 1, S0194: 1 and H0422: 1.			

HOCPW68	HOCPW68R	1407	1 - 297	3582				
HOCPW81	HOCPW81R	1408	2 - 694	3583	Pro-42 to Ser-59, Asp-159 to Asn-168, Tyr-196 to Gly-205.	H0046: 9, L0777: 3, S0376: 2, H0050: 2, S0344: 2, S0126: 2, H0670: 2, S0152: 2, H0521: 2, H0542: 2, H0543: 2, H0341: 1, S0354: 1, S0358: 1, S0408: 1, H0619: 1, H0393: 1, H0592: 1, H0590: 1, S0474: 1, H0546: 1, H0551: 1, H0494: 1, S0440: 1, L0663: 1, H0660: 1, H0672: 1, H0631: 1, S0028: 1, L0757: 1, S0434: 1, L0581: 1 and L0593: 1.		
HOCPX01	HOCPX01R	1409	99 - 296	3584	Glu-24 to Ser-29.			
HOCPY70	HOCPY70R	1410	266 - 442	3585		H0617: 5, L0769: 4, L0776: 4, L0751: 4, L0747: 4, L0774: 3, H0685: 2, H0657: 2, H0483: 2, H0486: 2, H0052: 2, H0674: 2, H0494: 2, L0775: 2, L0518: 2, H0682: 2, L0603: 2, H0170: 1, S6024: 1, S0116: 1, H0664: 1, H0306: 1,		

HOCPZ76	HOCPZ76R	1411	2 - 460	3586	Pro-93 to Arg-99, Ser-143 to Val-149.	S0420: 1, S0376: 1, S0360: 1, S0007: 1, S0300: 1, S0222: 1, S6014: 1, H0250: 1, L0021: 1, L0022: 1, S0049: 1, H0309: 1, H0150: 1, H0009: 1, S0051: 1, H0188: 1, T0006: 1, H0604: 1, H0673: 1, H0169: 1, H0087: 1, L0065: 1, L0763: 1, L0638: 1, L0773: 1, L0662: 1, L0768: 1, L0766: 1, L0649: 1, L0651: 1, L0657: 1, L0540: 1, L0783: 1, L0809: 1, L0530: 1, L0787: 1, L0789: 1, L0665: 1, S0374: 1, S0126: 1, H0684: 1, H0660: 1, H0539: 1, S0380: 1, H0576: 1, L0741: 1, L0742: 1, L0749: 1, L0750: 1, L0779: 1, L0759: 1, S0031: 1 and L0590: 1.		
HOCQA25	HOCQA25R	1412	352 - 543	3587	Ser-25 to Ser-30.	S0358: 45, S0360: 30,			

		S0374: 22, S0444: 21, L0662: 21, S0408: 19, L0666: 15, S0380: 14, L0664: 11, L0665: 11, S0026: 11, H0059: 10, S0328: 10, S0330: 10, H0251: 9, L0809: 8, H0670: 8, S0378: 8, H0661: 7, S0354: 7, S0440: 7, L0775: 7, L0659: 7, L0663: 7, H0672: 7, S0406: 7, S0442: 6, S0414: 6, L0657: 6, L0774: 5, H0659: 5, L0754: 5, S0434: 5, S0376: 4, L0483: 4, L0532: 4, H0547: 4, H0660: 4, L0602: 4, L0592: 4, S0460: 4, S0007: 3, H0529: 3, L0520: 3, L0803: 3, H0648: 3, S0404: 3, L0748: 3, L0747: 3, L0750: 3, L0759: 3, H0445: 3, L0608: 3, S0424: 3, H0663: 2, H0664: 2, H0580: 2, L0444: 2, H0156: 2, H0014: 2, H0615: 2, H0688: 2,			

H0039: 2, H0644: 2, H0617: 2, H0032: 2, H0673: 2, L0763: 2, L0646: 2, L0804: 2, L0776: 2, H0627: 2, L0777: 2, L0758: 2, L0362: 2, H0506: 2, L0615: 1, H0685: 1, H0656: 1, L0778: 1, L0785: 1, H0341: 1, H0669: 1, H0662: 1, H0402: 1, S0356: 1, T0008: 1, S0476: 1, H0351: 1, H0299: 1, H0486: 1, H0013: 1, L0021: 1, T0082: 1, H0581: 1, H0421: 1, H0235: 1, H0596: 1, L0040: 1, H0178: 1, H0563: 1, H0012: 1, H0328: 1, H0031: 1, H0068: 1, H0135: 1, T0067: 1, H0264: 1, H0488: 1, H0100: 1, H0494: 1, S0352: 1, S0448: 1, S0450: 1, H0509: 1, S0472: 1, H0647: 1, H0695: 1, L0764: 1, L0765: 1, L0767: 1, L0768: 1,							

						L0364: 1, L0766: 1, L5568: 1, L0552: 1, L0376: 1, L0653: 1, L0655: 1, L0529: 1, H0144: 1, H0520: 1, H0690: 1, H0682: 1, H0684: 1, H0435: 1, H0658: 1, S0392: 1, H0478: 1, H0626: 1, H0631: 1, L0744: 1, L0751: 1, L0749: 1, L0779: 1, L0755: 1, S0308: 1, H0707: 1, L0596: 1, L0593: 1 and S0384: 1.		
HOCQA26	HOCQA26R	1413	1 - 384	3588				
HOCQA37	HOCQA37R	1414	13 - 276	3589				
HOCQA86	HOCQA86R	1415	3 - 455	3590				
HOCQB18	HOCQB18R	1416	3 - 473	3591	Met-1 to Leu-6, Gly-19 to Lys-26, Ala-32 to Lys-38, Ala-89 to Leu-94, Gly-134 to Val-141.			
HOCQB48	HOCQB48R	1417	1 - 588	3592	Met-36 to Pro-42, Pro-49 to Thr-55, Leu-104 to Met-110, Trp-112 to Asn-117, Glu-122 to Tyr-134, Gln-142 to Ser-148, Leu-174 to Tyr-180.			

HOCQC57	HOCQC57R	1418	1 - 237	3593		L0766: 6, L0752: 5, L0794: 4, H0039: 3, H0622: 3, S0440: 3, L0770: 3, L0809: 3, H0547: 3, L0747: 3, S0356: 2, H0587: 2, H0427: 2, H0156: 2, H0015: 2, H0031: 2, L0771: 2, L0662: 2, L0768: 2, L0804: 2, L0659: 2, L0666: 2, L0664: 2, L0438: 2, H0660: 2, L0740: 2, L0754: 2, L0745: 2, L0749: 2, L0731: 2, L0593: 2, H0624: 1, H0657: 1, H0656: 1, H0370: 1, H0438: 1, T0040: 1, L0586: 1, T0114: 1, H0036: 1, S0010: 1, H0052: 1, H0545: 1, H0050: 1, H0014: 1, H0373: 1, L0163: 1, H0051: 1, H0071: 1, T0010: 1, H0030: 1, H0316: 1, H0598: 1, H0090: 1, S0038: 1, H0561: 1, H0509: 1, H0130: 1, H0633: 1, S0002: 1,		

						L0500: 1, L0761: 1, L0764: 1, L0773: 1, L0649: 1, L0375: 1, L0805: 1, L0653: 1, L0544: 1, L0545: 1, L0792: 1, L0663: 1, L0665: 1, H0670: 1, H0666: 1, H0521: 1, L0743: 1, L0439: 1, L0777: 1, L0755: 1, L0758: 1, L0596: 1, L0589: 1, L0592: 1, H0216: 1, H0542: 1, H0423: 1 and H0352: 1.		
HOCQC71	HOCQC71R	1419	216 - 521	3594	Thr-21 to Gly-28, Lys-36 to Gly-43, Ala-73 to His-85.			
HOCQD10	HOCQD10R	1420	2 - 529	3595				
HOCQD19	HOCQD19R	1421	3 - 335	3596	Gly-70 to Gly-79.		H0556: 2, H0519: 2, S0116: 1, H0370: 1, H0063: 1, L0800: 1, L0803: 1, L0383: 1, L0789: 1, H0593: 1, H0659: 1, H0660: 1, L0777: 1 and H0665: 1.	
HOCQD38	HOCQD38R	1422	290 - 550	3597			L0748: 49, L0766: 22, H0457: 12, L0439: 12, H0581: 11, L0659: 11, L0754: 11, L0745: 10, L0662: 9, L0665: 9,	

		H0710: 9, H0556: 8, L0666: 8, H0521: 8, L0751: 8, L0758: 8, L0592: 8, H0486: 7, H0318: 7, L0774: 7, L0664: 7, S0360: 6, H0510: 6, L0731: 6, H0423: 6, H0638: 5, H0580: 5, H0427: 5, H0050: 5, H0271: 5, L0800: 5, H0670: 5, H0552: 5, L0581: 5, H0506: 5, H0402: 4, S0358: 4, H0179: 4, L0768: 4, L0803: 4, L0438: 4, H0547: 4, H0658: 4, S0328: 4, H0555: 4, H0436: 4, L0747: 4, L0750: 4, L0777: 4, L0759: 4, L0593: 4, S0134: 3, H0657: 3, H0663: 3, H0305: 3, S0420: 3, H0619: 3, H0635: 3, H0098: 3, H0575: 3, S0003: 3, H0264: 3, H0413: 3, H0623: 3, H0494: 3, H0641: 3, L0763: 3, L0667: 3, L0794: 3, L0775: 3,			

		L0651: 3, L0806: 3, L0653: 3, L0776: 3, L0655: 3, H0519: 3, H0690: 3, S0330: 3, L0602: 3, S0404: 3, L0779: 3, L0752: 3, L0755: 3, H0542: 3, S0114: 2, S0282: 2, H0661: 2, S0356: 2, S0376: 2, S0132: 2, H0411: 2, H0431: 2, H0586: 2, H0013: 2, H0069: 2, S0280: 2, L0021: 2, H0599: 2, H0046: 2, H0014: 2, H0051: 2, H0266: 2, H0416: 2, H0687: 2, H0316: 2, H0634: 2, H0551: 2, T0042: 2, S0440: 2, H0646: 2, S0002: 2, H0529: 2, L0769: 2, L0638: 2, L0761: 2, L0372: 2, L0646: 2, L0641: 2, L0648: 2, L0804: 2, L0784: 2, L0606: 2, L0527: 2, L0663: 2, S0374: 2, L0565: 2, H0711: 2, S0380: 2, H0696: 2, S3014: 2,				

		L0744: 2, L0740: 2, L0746: 2, L0757: 2, H0445: 2, L0591: 2, H0543: 2, H0422: 2, H0220: 1, H0222: 1, H0685: 1, S0430: 1, H0650: 1, L0808: 1, S0116: 1, S0212: 1, S0001: 1, H0662: 1, H0459: 1, S0418: 1, S0408: 1, H0393: 1, L0717: 1, H0369: 1, H0261: 1, H0392: 1, H0409: 1, H0574: 1, H0632: 1, L0623: 1, T0039: 1, T0109: 1, H0250: 1, H0036: 1, S0474: 1, T0071: 1, H0421: 1, S0049: 1, H0052: 1, H0309: 1, H0204: 1, H0597: 1, H0544: 1, H0546: 1, H0024: 1, H0200: 1, H0071: 1, T0010: 1, H0083: 1, H0355: 1, S0318: 1, S0250: 1, H0039: 1, L0483: 1, H0031: 1, H0553: 1, H0644: 1, H0182: 1, H0032: 1, H0388: 1,			

HOCQD42	HOCQD42R	1423	1 - 315	3598	Ala-1 to Gly-8, Leu-26 to Ser-40, Pro-57 to Leu-95.	H0040: 1, H0380: 1, H0280: 1, H0560: 1, H0561: 1, L0065: 1, H0652: 1, S0426: 1, L0369: 1, L0639: 1, L0637: 1, L0772: 1, L0642: 1, L0765: 1, L0378: 1, L0805: 1, L0607: 1, L0629: 1, L0384: 1, L0647: 1, L0789: 1, L0790: 1, S0052: 1, S0216: 1, H0144: 1, H0593: 1, S0126: 1, H0689: 1, H0682: 1, H0435: 1, H0659: 1, H0660: 1, H0648: 1, H0672: 1, H0518: 1, S0152: 1, S0406: 1, H0187: 1, H0576: 1, S0392: 1, H0478: 1, H0345: 1, S0027: 1, L0756: 1, S0031: 1, H0444: 1, H0707: 1, S0434: 1, L0599: 1, S0011: 1, H0668: 1, H0667: 1, S0196: 1 and L0697: 1.		

HOCQD45	HOCQD45R	1424	38 - 475	3599	Arg-11 to Arg-20, Glu-61 to Ser-66, Pro-114 to Ala-125.			
HOCQE35	HOCQE35R	1425	3 - 410	3600				
HOCQG94	HOCQG94R	1426	3 - 317	3601	Glu-58 to Arg-63.			
HOCQH81	HOCQH81R	1427	144 - 335	3602				
HOCQI31	HOCQI31R	1428	1 - 324	3603	Lys-21 to His-26, Arg-47 to Val-55, Ser-65 to Gly-70, Ala-76 to Gly-81.	S0126: 23, H0038: 16, S0372: 15, H0550: 12, H0031: 12, H0545: 10, L0659: 10, S0360: 9, L0662: 9, L0757: 9, L0758: 9, H0551: 8, S0322: 8, H0431: 7, L0666: 7, L0750: 7, H0486: 6, H0546: 6, S0440: 6, L0776: 6, H0549: 5, H0620: 5, L0664: 5, H0593: 5, H0672: 5, H0539: 5, S0380: 5, H0555: 5, L0747: 5, S0358: 4, S0007: 4, H0409: 4, S0010: 4, H0039: 4, H0622: 4, H0616: 4, L0769: 4, L0641: 4, L0655: 4, H0696: 4, L0731: 4, S0040: 3, S0212: 3, S0418: 3, S0045: 3, S0280: 3, H0012: 3, H0090: 3,		

		L0637: 3, L0771: 3, L0775: 3, L0651: 3, L0653: 3, H0690: 3, H0660: 3, S0328: 3, S0044: 3, H0295: 2, T0049: 2, H0662: 2, S0356: 2, S0354: 2, S0376: 2, L0717: 2, H0441: 2, H0333: 2, H0574: 2, H0257: 2, H0485: 2, H0575: 2, H0251: 2, H0544: 2, L0471: 2, H0014: 2, S0051: 2, H0266: 2, H0687: 2, S0003: 2, H0328: 2, H0615: 2, T0067: 2, H0412: 2, H0059: 2, S0016: 2, H0647: 2, S0210: 2, L0598: 2, L0520: 2, L0638: 2, L0796: 2, L0772: 2, L0764: 2, L0519: 2, L0790: 2, H0519: 2, H0689: 2, H0710: 2, S0406: 2, S3014: 2, S0028: 2, S0206: 2, L0740: 2, S0031: 2, L0604: 2, L0601: 2, S0192: 2, S0342: 1, L0785: 1,				

		S0116: 1, S0298: 1, H0663: 1, S0420: 1, S0410: 1, S0468: 1, H0369: 1, H0453: 1, H0370: 1, H0392: 1, H0602: 1, H0587: 1, T0039: 1, H0013: 1, H0004: 1, H0052: 1, H0309: 1, H0046: 1, H0041: 1, H0081: 1, H0011: 1, H0049: 1, T0079: 1, H0375: 1, S0250: 1, S0214: 1, H0252: 1, H0428: 1, T0006: 1, H0032: 1, H0708: 1, H0316: 1, H0598: 1, H0400: 1, H0100: 1, H0494: 1, L0475: 1, S0014: 1, S0015: 1, H0625: 1, S0382: 1, H0646: 1, L0762: 1, L0763: 1, L0630: 1, L0646: 1, L0768: 1, L0649: 1, L0806: 1, L0656: 1, L0809: 1, L0647: 1, L0663: 1, L0665: 1, S0374: 1, H0691: 1, H0547: 1, H0682: 1, H0521: 1, S0027: 1,			

HOCQJ35	HOCQJ35R	1429	61 - 546	3604	Leu-16 to Pro-22, Val-30 to Asp-36.	L0748: 1, L0756: 1, L0777: 1, L0752: 1, L0755: 1, H0343: 1, H0707: 1, L0605: 1, H0668: 1, S0196: 1 and H0506: 1.	H0046: 12, L0771: 7, L0774: 3, L0651: 3, L0806: 3, L0666: 3, L0565: 3, L0748: 3, S0444: 2, S0408: 2, H0393: 2, L0372: 2, L0662: 2, L0766: 2, L0659: 2, L0664: 2, L0744: 2, L0731: 2, H0294: 1, S0442: 1, S0278: 1, H0549: 1, L0021: 1, H0085: 1, H0234: 1, H0596: 1, H0597: 1, H0546: 1, H0024: 1, S0003: 1, H0252: 1, H0383: 1, H0674: 1, H0068: 1, H0487: 1, H0413: 1, T0069: 1, H0100: 1, H0494: 1, H0625: 1, S0352: 1, L0761: 1, L0772: 1, L0646: 1, L0800: 1, L0764: 1, L0773: 1, L0794: 1,		

						L0649: 1, L0803: 1, L0805: 1, L0653: 1, L0515: 1, L0367: 1, L0665: 1, S0374: 1, H0684: 1, H0660: 1, S0328: 1, S0044: 1, S0404: 1, L0740: 1, L0747: 1, L0757: 1, L0758: 1, S0260: 1 and S0276: 1.		
HOCQM24	HOCQM24R	1430	3 - 230	3605	Gly-2 to Gly-12, Gly-14 to Asn-28, Met-32 to Gly-49, Lys-54 to Phe-76.			
HODAF78	HODAF78R	1431	2 - 76	3606				
HODBT55	HODBT55R	1432	234 - 395	3607	Ala-1 to Ser-8.	H0328: 1 and H0435: 1.		
HODCT68	HODCT68R	1433	266 - 484	3608	Gln-1 to Pro-16.	L0493: 4, L0794: 3, H0497: 2, H0038: 2, L0766: 2, L0809: 2, L0779: 2, L0777: 2, L0759: 2, L0601: 2, H0170: 1, S0114: 1, H0341: 1, H0125: 1, S0046: 1, H0592: 1, H0587: 1, H0559: 1, H0156: 1, H0328: 1, H0616: 1, H0386: 1, H0538: 1, H0529: 1, L0769: 1, L0764: 1,		

					L0775: 1, L0666: 1, H0659: 1, H0518: 1, L0741: 1, L0439: 1, L0747: 1, L0593: 1, L0594: 1, H0665: 1 and H0667: 1.		
HODCZ52	HODCZ52R	1434	2 - 139	3609	AR089: 19, AR104: 18, AR060: 12, AR096: 7, AR055: 4, AR061: 3 L0751: 29, H0549: 17, H0550: 17, L0666: 9, L0747: 8, H0689: 7, H0690: 7, H0682: 7, H0615: 6, H0670: 6, H0328: 5, H0150: 4, H0660: 4, S0330: 4, S0044: 4, L0362: 4, H0597: 3, H0688: 3, L0764: 3, L0657: 3, L0809: 3, L0753: 3, L0758: 3, L0759: 3, H0431: 2, H0046: 2, T0067: 2, H0059: 2, H0647: 2, L0774: 2, L0805: 2, L0783: 2, L0438: 2, H0593: 2, H0648: 2, H0672: 2, S0328: 2, S0404: 2, L0744: 2, L0779: 2,		

					S0436: 2, H0662: 1, S0442: 1, S0444: 1, S0408: 1, S0007: 1, H0461: 1, H0085: 1, H0009: 1, S0024: 1, H0188: 1, H0039: 1, H0604: 1, H0424: 1, H0169: 1, H0674: 1, L0520: 1, L5569: 1, L0803: 1, L0804: 1, L0775: 1, L0658: 1, L0634: 1, L0542: 1, L0528: 1, L2269: 1, L0663: 1, L0665: 1, H0684: 1, H0659: 1, H0658: 1, S0380: 1, S0406: 1, H0555: 1 and L0780: 1.		
HODDI57	HODDI57R	1435	3 - 194	3610	Gly-7 to Glu-41.	L0794: 4, L0803: 4, H0328: 3, L0779: 3, L0515: 2, L0809: 2, H0144: 2, L0754: 2, L0756: 2, L0759: 2, H0171: 1, S0282: 1, H0346: 1, S0222: 1, H0441: 1, H0486: 1, H0069: 1, H0052: 1, H0544: 1, H0266: 1, L0598: 1, L0638: 1, L0766: 1, L0650: 1,	

					L0774: 1, L0805: 1, L0776: 1, L0657: 1, L0559: 1, L0659: 1, L0543: 1, L0438: 1, H0682: 1, S0328: 1, L0745: 1, L0750: 1, L0777: 1, L0752: 1, L0758: 1, H0343: 1 and H0665: 1.		
HODEJ47	HODEJ47R	1436	11 - 295	3611	Leu-7 to Thr-16.	L0754: 20, L0759: 6, L0794: 4, H0615: 3, L0438: 3, S0126: 3, S0360: 2, H0411: 2, H0050: 2, H0163: 2, S0422: 2, L0665: 2, L0748: 2, L0747: 2, L0749: 2, L0780: 2, L0755: 2, H0595: 2, L0361: 2, H0170: 1, H0686: 1, H0638: 1, S0418: 1, S0358: 1, S0376: 1, H0586: 1, H0587: 1, H0009: 1, H0024: 1, H0328: 1, H0428: 1, H0625: 1, S0210: 1, L0598: 1, L0667: 1, L0764: 1, L0662: 1, L0766: 1, L0649: 1, L0650: 1, L0805: 1, L0655: 1,		

							L0789: 1, L0663: 1, H0144: 1, S0330: 1, S0028: 1, L0751: 1, L0750: 1, L0731: 1, L0758: 1 and L0605: 1.		
HODEO42	HODEO42R	1437	1 - 54	3612					
HODEP78	HODEP78R	1438	187 - 432	3613			L0803: 7, L0439: 4, L0663: 3, L0749: 3, H0615: 2, L0769: 2, L0794: 2, L0774: 2, L0748: 2, L0777: 2, L0752: 2, L0142: 1, H0646: 1, L0767: 1, L0804: 1, L0784: 1, L0805: 1, L0789: 1, L0666: 1, L0438: 1, H0670: 1 and L0589: 1.		
HODEQ42	HODEQ42R	1439	349 - 444	3614	Asn-1 to Ser-6, Thr-22 to Asn-32.		H0615: 1 and S0031: 1.		
HODER57	HODER57R	1440	92 - 289	3615					
HODES60	HODES60R	1441	2 - 421	3616			L0662: 2, H0615: 1, L0761: 1, L0791: 1, H0519: 1, L0752: 1 and L0758: 1.		
HODEU47	HODEU47R	1442	153 - 347	3617	Ser-1 to Ser-9, Asp-15 to Ala-21.		H0615: 2		
HODEV69	HODEV69R	1443	370 - 546	3618					
HODEW54	HODEW54R	1444	374 - 568	3619			H0328: 1 and H0615: 1.		

HODEW79	HODEW79R	1445	309 - 566	3620					
HODEX45	HODEX45R	1446	220 - 423	3621		H0615: 2 and L0532: 1.			
HODEX69	HODEX69R	1447	58 - 231	3622		H0615: 4 and L0659: 1.			
HODEX79	HODEX79R	1448	1 - 432	3623					
HODFC44	HODFC44RP 00	1449	1 - 207	3624	Ala-9 to Asp-21, Thr-31 to Arg-37.	L0747: 16, L0754: 10, L0751: 7, L0757: 7, H0657: 6, L0748: 6, L0771: 5, H0659: 5, L0740: 5, L0755: 5, H0594: 4, L0744: 4, H0341: 3, S0358: 3, S0278: 3, H0333: 3, H0615: 3, S0366: 3, L0520: 3, L0775: 3, L0517: 3, S0374: 3, S0328: 3, L0731: 3, H0136: 3, T0002: 2, S0218: 2, S0116: 2, S0354: 2, S0376: 2, H0637: 2, S0045: 2, H0370: 2, L0622: 2, H0156: 2, H0599: 2, H0545: 2, H0266: 2, H0039: 2, H0617: 2, H0132: 2, L0769: 2, L0665: 2, H0672: 2, H0539: 2, H0134: 2, L0756: 2, L0752: 2,			

		L0758: 2, H0624: 1, H0170: 1, H0265: 1, S6024: 1, H0656: 1, H0255: 1, H0661: 1, H0125: 1, H0192: 1, S0418: 1, S0420: 1, S0360: 1, H0580: 1, H0393: 1, S0300: 1, H0411: 1, H0369: 1, H0261: 1, S0222: 1, L0623: 1, S0280: 1, H0618: 1, H0318: 1, H0581: 1, H0421: 1, L0738: 1, H0086: 1, L0471: 1, H0024: 1, H0082: 1, L0043: 1, S0214: 1, H0031: 1, H0673: 1, H0068: 1, H0038: 1, H0634: 1, H0087: 1, T0067: 1, H0412: 1, H0100: 1, H0512: 1, S0144: 1, S0142: 1, S0344: 1, S0422: 1, H0517: 1, L0762: 1, L0763: 1, L0761: 1, L0764: 1, L0768: 1, L0766: 1, L0649: 1, L0774: 1, L0651: 1, L0776: 1, L0655: 1, L0526: 1,				

HODFD90	HODFD90R	1450	3 - 281	3625	Ser-22 to Gln-38.	L0518: 1, L0783: 1, L0809: 1, L0666: 1, L0663: 1, H0144: 1, H0593: 1, H0682: 1, H0648: 1, S0044: 1, H0214: 1, L0439: 1, L0749: 1, L0750: 1, L0753: 1, H0444: 1, H0445: 1, H0595: 1, L0581: 1, L0593: 1 and H0542: 1.		
						L0794: 3, L0776: 2, S0358: 1, H0615: 1, H0538: 1, L0662: 1, L0803: 1, L0805: 1, L0791: 1, L0663: 1, S0374: 1, H0658: 1 and L0758: 1.		
HODFE81	HODFE81R	1451	296 - 433	3626				
HODFI68	HODFI68R	1452	293 - 409	3627		L0766: 2, H0328: 1 and H0615: 1.		
HODFJ14	HODFJ14R	1453	2 - 259	3628	Phe-45 to Tyr-60, Arg-67 to Glu-74.			
HODFJ52	HODFJ52R	1454	97 - 225	3629	Pro-18 to Pro-23, Pro-37 to Val-42.	H0328: 1 and H0615: 1.		
HODFK30	HODFK30RA	1455	1 - 69	3630				
HODFK89	HODFK89R	1456	16 - 324	3631	Lys-69 to Asp-81.			
HODFL50	HODFL50R	1457	1 - 165	3632		H0615: 2, H0370: 1, H0328: 1 and L0749: 1.		

HODFL75	HODFL75R	1458	304 - 393	3633	Ala-2 to Trp-9.			
HODFO16	HODFO16R	1459	251 - 565	3634		H0615: 2		
HODFO64	HODFO64R	1460	1 - 195	3635	Glu-12 to Gly-27, Gln-37 to Tyr-49.	L0666: 3, H0615: 2, S0116: 1, H0675: 1, H0012: 1, L0055: 1, S0438: 1, L0763: 1, L0667: 1, L0649: 1, L0803: 1, L0804: 1, L0659: 1, H0689: 1, H0659: 1, L0752: 1 and S0026: 1.		
HODFP51	HODFP51R	1461	11 - 439	3636	His-33 to Leu-39, Gly-49 to Glu-56, Ser-60 to Lys-143.			
HODFQ19	HODFQ19R	1462	1 - 519	3637	Leu-33 to Val-40, Lys-144 to Glu-152.			
HODFQ37	HODFQ37R	1463	2 - 535	3638	His-1 to Lys-12, Gln-17 to Leu-27, Val-69 to Asp-76, Asp-122 to Trp-128, Asp-141 to Glu-146, Ser-155 to His-164.			
HODFR72	HODFR72R	1464	84 - 512	3639		H0615: 2		
HODFU24	HODFU24R	1465	372 - 695	3640				
HODFU78	HODFU78R	1466	2 - 130	3641				
HODFV22	HODFV22R	1467	291 - 467	3642	Pro-1 to Asp-7.			
HODFV60	HODFV60R	1468	7 - 168	3643		H0328: 1, H0615: 1 and L0365: 1.		
HODFV69	HODFV69R	1469	64 - 210	3644		H0615: 3, H0693: 2,		

						H0266: 1, S0002: 1, L0790: 1, H0547: 1, S0152: 1, H0521: 1, H0696: 1, L0366: 1, S0194: 1 and S0276: 1.		
HODFV79	HODFV79R	1470	360 - 623	3645				
HODFV82	HODFV82R	1471	14 - 154	3646				
HODFV95	HODFV95R	1472	587 - 718	3647				
HODFY38	HODFY38R	1473	22 - 309	3648	Lys-8 to Tyr-26, Thr-67 to Met-73.	H0615: 2, S0444: 1, L0438: 1 and L0439: 1.		
HODGA29	HODGA29R	1474	186 - 308	3649	Val-1 to Ser-9, Gln-22 to Ser-29.			
HODGB69	HODGB69R	1475	3 - 95	3650				
HODGB78	HODGB78R	1476	91 - 225	3651	Thr-14 to Asn-19.			
HODGE22	HODGE22R	1477	129 - 407	3652				
HODGH30	HODGH30R	1478	25 - 132	3653	Thr-7 to Ser-14, Pro-28 to Gly-36.			
HODGH43	HODGH43R	1479	36 - 128	3654	His-8 to Gly-18, Phe-25 to Gly-30.			
HODGH65	HODGH65R	1480	2 - 166	3655		H0615: 2		
HODGL65	HODGL65R	1481	127 - 300	3656		L0754: 2, L0756: 2, H0615: 1, L0438: 1 and L0747: 1.		
HODGN53	HODGN53R	1482	2 - 583	3657	Lys-1 to Thr-7, Ser-13 to Arg-33, Val-56 to Lys-63, Phe-143 to Thr-148.	L0741: 4, H0615: 2, L0769: 2, L0793: 2, H0328: 1, S0144: 1, L0794: 1, L0499: 1, L0805: 1, L0438: 1 and L0755: 1.		

HODGO02	HODGO02R	1483	361 - 561	3658				
HODGO09	HODGO09R	1484	1 - 348	3659		H0615: 2 and L0779: 1.		
HODGO21	HODGO21R	1485	2 - 193	3660	Glu-23 to Val-28, Arg-56 to Ser-64.			
HODGP53	HODGP53R	1486	1 - 198	3661				
HODGQ52	HODGQ52R	1487	9 - 131	3662				
HODGS83	HODGS83R	1488	205 - 354	3663				
HODGW91	HODGW91R	1489	182 - 3	3664	Lys-1 to Gly-12, Pro-25 to Thr-37, Ser-46 to Gly-51.			
HODGX46	HODGX46R	1490	358 - 513	3665		H0615: 3 and L0766: 1.		
HODGX91	HODGX91R	1491	219 - 572	3666				
HODGY90	HODGY90R	1492	379 - 573	3667				
HODGZ63	HODGZ63R	1493	1 - 504	3668	Pro-30 to Asn-35, Arg-39 to Asn-57, Ser-62 to Ile-67, Glu-73 to Arg-81, Lys-89 to Lys-99.	L0805: 19, L0794: 13, L0766: 12, L0740: 11, L0747: 11, L0779: 11, L0803: 8, H0521: 7, L0439: 7, L0731: 7, L0605: 7, S0474: 6, S0422: 6, L0769: 6, L0776: 5, L0665: 5, L0748: 5, L0758: 5, H0618: 4, S0010: 4, L0771: 4, L0789: 4, S3014: 4, H0341: 3, H0615: 3, L0659: 3, S0052: 3, L0438: 3,		

		H0658: 3, H0436: 3, L0752: 3, L0759: 3, S0360: 2, S0222: 2, H0574: 2, H0599: 2, H0196: 2, H0050: 2, H0266: 2, H0708: 2, H0135: 2, H0038: 2, H0616: 2, L0804: 2, H0144: 2, S0374: 2, L0352: 2, H0682: 2, L0743: 2, L0744: 2, L0751: 2, L0749: 2, L0756: 2, S0424: 2, H0624: 1, T0002: 1, H0657: 1, L0785: 1, H0671: 1, S0442: 1, S0408: 1, H0733: 1, S0278: 1, H0431: 1, H0013: 1, S0280: 1, H0581: 1, S0049: 1, H0052: 1, H0251: 1, L0040: 1, H0123: 1, L0471: 1, H0630: 1, H0375: 1, S0003: 1, H0252: 1, L0483: 1, T0006: 1, H0644: 1, H0673: 1, S0036: 1, H0163: 1, H0040: 1, H0551: 1, H0412: 1, H0413: 1, S0038: 1,				

HODGZ76	HODGZ76R	1494	12 - 179	3669		H0509: 1, H0131: 1, S0344: 1, L0598: 1, L0369: 1, L0763: 1, L0770: 1, L0638: 1, L0667: 1, L0662: 1, L0363: 1, L0768: 1, L0775: 1, L0375: 1, L0806: 1, L0653: 1, L0655: 1, L0809: 1, S0126: 1, H0689: 1, H0684: 1, H0660: 1, H0672: 1, H0710: 1, H0522: 1, S0146: 1, S3012: 1, S0027: 1, S0028: 1, L0745: 1, L0750: 1, L0780: 1, L0753: 1, H0445: 1, L0362: 1, L0361: 1, H0653: 1, H0423: 1 and H0506: 1.		
HODHD23	HODHD23R	1495	3 - 134	3670	Pro-8 to Asn-18, Gln-25 to Glu-30.				
HODHD64	HODHD64R	1496	14 - 205	3671	Tyr-33 to Tyr-38.	H0615: 2			
HODHE36	HODHE36R	1497	190 - 366	3672		H0328: 1 and H0615: 1.			
HODHE54	HODHE54R	1498	3 - 515	3673	Glu-7 to Tyr-12, Glu-44 to Asp-49, Pro-57 to Gly-64, Leu-69 to Arg-74,				

					Thr-76 to Tyr-86.			
HODHE88	HODHE88R	1499	2 - 166	3674	Lys-42 to Asp-48.	H0328: 1 and H0615: 1.		
HODHG56	HODHG56R	1500	82 - 300	3675	Glu-11 to Trp-17, Val-22 to Ser-29, Asp-45 to Lys-52.			
HODHJ56	HODHJ56R	1501	281 - 499	3676	Trp-12 to Ile-18, Gln-40 to Leu-54.			
HODHK82	HODHK82R	1502	71 - 238	3677	Lys-17 to Ala-24.			
HODHK86	HODHK86R	1503	2 - 292	3678	Glu-1 to Gln-7, Met-64 to Gly-69.			
HODIG29	HODIG29R	1504	2 - 115	3679				
HODJL36	HODJL36RA	1505	218 - 472	3680	Lys-9 to Ser-15, Val-42 to Thr-50.	H0261: 1 and H0615: 1.		
HODJZ09	HODJZ09R	1506	31 - 594	3681	Phe-116 to Met-126.	AR104: 14, AR096: 13, AR089: 11, AR060: 10, AR055: 6, AR061: 5 H0615: 3, H0658: 2, H0661: 1 and L0355: 1.		
HODKB19	HODKB19R	1507	504 - 746	3682				
HODKB82	HODKB82R	1508	3 - 344	3683	Gln-40 to Glu-48, Phe-68 to Arg-77, Ile-108 to Glu-113.			
HODKB89	HODKB89R	1509	73 - 216	3684				
HODKB93	HODKB93R	1510	1 - 159	3685	Arg-33 to Thr-38.			
HODKC29	HODKC29R	1511	1 - 486	3686		S0360: 9, L0642: 5, L0752: 5, L0662: 4, L0659: 4, L0666: 4,		

		S0007: 3, L0646: 3, L0776: 3, L0750: 3, H0662: 2, S0444: 2, S0222: 2, L0483: 2, L0764: 2, L0648: 2, L0775: 2, L0665: 2, H0648: 2, L0779: 2, S0031: 2, S0110: 1, H0638: 1, S0418: 1, S0376: 1, S0408: 1, L0717: 1, H0331: 1, H0574: 1, S0414: 1, H0492: 1, H0156: 1, L0021: 1, S0049: 1, H0310: 1, H0327: 1, H0373: 1, T0010: 1, S6028: 1, H0615: 1, S0366: 1, S0036: 1, H0038: 1, H0616: 1, H0413: 1, T0041: 1, H0494: 1, S0438: 1, S0440: 1, H0509: 1, S0142: 1, S0210: 1, L0598: 1, L0762: 1, L0640: 1, L0631: 1, L0772: 1, L0766: 1, L0551: 1, L0774: 1, L0664: 1, H0547: 1, S0126: 1, H0659: 1, S0378: 1, S0152: 1,				

						H0696: 1, S3014: 1, L0439: 1, L0740: 1, L0754: 1, L0756: 1, L0780: 1, L0755: 1, L0758: 1, S0434: 1 and H0667: 1.		
HODKC67	HODKC67R	1512	242 - 373	3687		H0615: 2		
HODKD20	HODKD20R	1513	43 - 213	3688	Arg-11 to Ser-17, Leu-51 to Pro-57.			
HODKD64	HODKD64R	1514	413 - 237	3689	Pro-5 to Asn-10.	H0615: 2 and H0696: 1.		
HODKE85	HODKE85R	1515	314 - 412	3690	Ser-18 to Ile-23.	H0615: 2 and H0328: 1.		
HODKF91	HODKF91R	1516	244 - 417	3691	Lys-12 to Ser-18.			
HODKG09	HODKG09R	1517	28 - 240	3692				
HODKJ77	HODKJ77R	1518	452 - 595	3693		H0615: 2		
HODKK26	HODKK26R	1519	2 - 415	3694	Asp-40 to Gly-45, Leu-59 to Glu-67, Lys-95 to Ile-105, Asp-113 to Gly-118.			
HODKK40	HODKK40R	1520	1 - 642	3695	Ser-15 to Phe-23, Lys-41 to Tyr-46, Pro-48 to Val-59, Thr-90 to Ile-103, Ser-110 to Arg-116, Pro-123 to Lys-137, Lys-157 to Glu-167, Arg-178 to Arg-194.			
HODKK73	HODKK73R	1521	3 - 344	3696	Phe-106 to Pro-114.			

HODKK77	HODKK77R	1522	272 - 433	3697	Ser-8 to Asn-15.	H0615: 2		
HODKL56	HODKL56R	1523	439 - 579	3698				
HODKM25	HODKM25R	1524	36 - 149	3699				
HODKM31	HODKM31R	1525	1 - 210	3700				
HODKN65	HODKN65R	1526	2 - 409	3701				
HOECR39	HOECR39R	1527	20 - 328	3702		H0659: 4, L0770: 3, L0747: 3, H0663: 2, S0360: 2, L0521: 2, L0776: 2, S0126: 2, H0658: 2, S0406: 2, L0755: 2, L0758: 2, L0759: 2, S0242: 2, T0002: 1, H0686: 1, H0341: 1, L0616: 1, S0354: 1, S0408: 1, H0052: 1, H0009: 1, H0083: 1, H0266: 1, H0615: 1, L0483: 1, H0040: 1, H0561: 1, S0422: 1, L0520: 1, L0625: 1, L0662: 1, L0766: 1, L0649: 1, L0519: 1, H0648: 1, S3014: 1, L0748: 1 and L0779: 1.		
HOFAB77	HOFAB77R	1528	1 - 399	3703	Glu-10 to Ala-26, Lys-31 to Tyr-43, Lys-45 to Glu-50, Ile-96 to Lys-102, Asp-123 to Gly-128.			

HOFMF37	HOFMF37R	1529	95 - 277	3704				
HOFMF79	HOFMF79RA	1530	85 - 219	3705				
HOFMJ88	HOFMJ88R	1531	2 - 397	3706	Arg-1 to Phe-16.			
HOFMJ93	HOFMJ93R	1532	1 - 162	3707	His-3 to Ala-19.			
HOFMM84	HOFMM84R	1533	1 - 204	3708				
HOFMN93	HOFMN93R	1534	69 - 323	3709	Glu-8 to Thr-14.	H0415: 2		
HOFMP59	HOFMP59R	1535	1 - 423	3710	Ala-5 to Arg-14.			
HOFMT68	HOFMT68R	1536	50 - 289	3711	Asn-41 to Lys-56.			
HOFMT69	HOFMT69R	1537	1 - 264	3712				
HOFMU92	HOFMU92R	1538	1 - 369	3713				
HOFMV06	HOFMV06R	1539	3 - 296	3714	Asp-1 to Leu-10.			
HOFNF63	HOFNF63R	1540	2 - 481	3715	Arg-1 to Arg-8, Ala-22 to Met-31, Asp-51 to Gln-56.	H0415: 2		
HOFNF76	HOFNF76R	1541	2 - 421	3716	Arg-1 to Ala-6, Ser-68 to Arg-73, Arg-87 to Ala-93.			
HOFNG51	HOFNG51R	1542	25 - 387	3717	Arg-1 to Cys-10, Glu-75 to Arg-94, Arg-99 to Gly-115.			
HOFNK44	HOFNK44R	1543	1 - 186	3718	Lys-52 to Asp-57.			
HOFNY53	HOFNY53R	1544	2 - 232	3719	Arg-1 to Phe-7, Gly-24 to Arg-36.			
HOFOB65	HOFOB65R	1545	1 - 453	3720				
HOFOB79	HOFOB79RP 00A	1546	2 - 682	3721	Val-31 to Val-38, Phe-46 to Ile-59, Arg-120 to Gln-126.			
HOFOE22	HOFOE22R	1547	1 - 345	3722				
HOFOF47	HOFOF47R	1548	3 - 326	3723	Asn-49 to Leu-54.			

HOFOF56	HOFOF56R	1549	1 - 351	3724	Ala-4 to Arg-11.			
HOGAC46	HOGAC46R	1550	35 - 193	3725	Ala-1 to Tyr-6, Ile-17 to Ser-32.			
HOGAQ03	HOGAQ03R	1551	110 - 286	3726	Pro-34 to Lys-39.	H0436: 44, L0748: 14, L0439: 9, L0747: 9, L0769: 7, L0803: 7, L0740: 7, L0755: 7, L0758: 7, L0761: 6, L0662: 6, L0794: 6, L0766: 6, L0663: 6, L0779: 6, H0542: 6, L0717: 5, L0756: 5, H0052: 4, H0135: 4, L0774: 4, L0659: 4, L0665: 4, L0777: 4, L0780: 4, L0731: 4, L0759: 4, H0556: 3, S0420: 3, S0410: 3, S0422: 3, L0763: 3, L0649: 3, L0804: 3, L0805: 3, L0776: 3, L0438: 3, H0547: 3, H0672: 3, H0539: 3, L0754: 3, L0757: 3, L0591: 3, H0422: 3, S0040: 2, S0114: 2, S0116: 2, H0255: 2, H0619: 2, H0486: 2, T0039: 2, H0013: 2, H0635: 2, H0253: 2,		

		H0318: 2, S0049: 2, H0046: 2, L0041: 2, H0688: 2, H0428: 2, H0628: 2, L0055: 2, H0040: 2, H0087: 2, H0488: 2, H0100: 2, T0042: 2, H0529: 2, L5566: 2, L0667: 2, L0771: 2, L0768: 2, L0375: 2, L0517: 2, L0809: 2, L0666: 2, H0520: 2, H0519: 2, H0593: 2, S0380: 2, H0694: 2, L0742: 2, L0751: 2, L0750: 2, S0434: 2, S0436: 2, L0361: 2, L0601: 2, L0603: 2, S0424: 2, H0506: 2, H0265: 1, H0650: 1, H0657: 1, H0656: 1, L0760: 1, H0341: 1, S0001: 1, H0663: 1, H0662: 1, S0418: 1, S0356: 1, S0408: 1, H0580: 1, S0007: 1, H0229: 1, S0045: 1, S0046: 1, S0132: 1, H0351: 1, H0411: 1, H0431: 1, H0592: 1, H0497: 1,				

		H0069: 1, S0280: 1, H0118: 1, H0618: 1, S0010: 1, H0421: 1, H0251: 1, H0204: 1, H0572: 1, H0050: 1, H0012: 1, H0373: 1, H0051: 1, T0010: 1, H0354: 1, H0252: 1, H0328: 1, H0622: 1, H0181: 1, H0617: 1, H0673: 1, H0038: 1, H0634: 1, H0616: 1, H0155: 1, H0264: 1, S0038: 1, H0022: 1, H0625: 1, H0538: 1, S0210: 1, S0002: 1, L0762: 1, L0770: 1, L5565: 1, L0373: 1, L0800: 1, L0642: 1, L0374: 1, L0764: 1, L0364: 1, L0388: 1, L0655: 1, L0657: 1, L0526: 1, L0518: 1, L0382: 1, L0789: 1, L0792: 1, L0664: 1, H0723: 1, H0726: 1, S0126: 1, H0689: 1, H0690: 1, H0682: 1, H0435: 1, H0670: 1, H0648: 1, S0330: 1,				

					S0378: 1, S0152: 1, S0406: 1, H0555: 1, H0678: 1, L0744: 1, L0752: 1, L0753: 1, H0445: 1, H0707: 1, L0593: 1, L0595: 1, S0011: 1, H0668: 1, S0026: 1, H0665: 1, S0196: 1, H0543: 1 and H0677: 1.		
HOGBE60	HOGBE60R	1552	265 - 591	3727	Asp-15 to His-22.	L0777: 7, L0747: 6, L0779: 6, L0748: 5, L0776: 4, L0749: 4, L0770: 3, L0766: 3, L0759: 3, S0442: 2, L0769: 2, L0761: 2, L0771: 2, L0774: 2, L0527: 2, L0783: 2, L0665: 2, L0757: 2, L0758: 2, S0412: 2, H0402: 1, S0444: 1, H0438: 1, H0587: 1, H0333: 1, L0471: 1, H0674: 1, H0646: 1, L0763: 1, L0643: 1, L0764: 1, L0662: 1, L0363: 1, L0767: 1, L0387: 1, L0803: 1, L0526: 1, L0647: 1, L0663: 1, H0690: 1,		

						H0435: 1, S0330: 1, S0406: 1, L0740: 1, L0751: 1, L0780: 1, S0436: 1 and L0596: 1.		
HOGCF48	HOGCF48R	1553	230 - 436	3728				
HOGCG83	HOGCG83R	1554	50 - 409	3729				
HOGCH23	HOGCH23R	1555	58 - 207	3730				
HOGCI28	HOGCI28R	1556	3 - 332	3731		H0435: 4, H0726: 3, L0748: 3, H0355: 2, H0059: 2, L0525: 2, H0713: 1, H0717: 1, H0586: 1, H0427: 1, H0575: 1, H0744: 1, H0327: 1, H0271: 1, H0622: 1, H0087: 1, S0438: 1, L0792: 1, H0593: 1, H0555: 1, L0698: 1 and H0506: 1.		
HOGCJ10	HOGCJ10R	1557	10 - 480	3732		H0052: 1, H0135: 1, H0429: 1, H0519: 1 and H0435: 1.		
HOGCJ42	HOGCJ42R	1558	3 - 254	3733	Val-6 to Ala-11.			
HOGCJ55	HOGCJ55R	1559	7 - 507	3734	Thr-56 to Glu-61, Lys-87 to Lys-95, Thr-110 to Arg-118.			
HOGCP07	HOGCP07R	1560	3 - 143	3735				
HOGCP86	HOGCP86RA	1561	1 - 486	3736	Arg-11 to Arg-16, Pro-46 to Thr-52, His-58 to Pro-65,			

					Ala-71 to Trp-77, Pro-134 to Gly-146.			
HOGCT44	HOGCT44R	1562	1 - 183	3737	His-14 to Phe-20, Ser-37 to Gly-60.			
HOGCV85	HOGCV85R	1563	3 - 443	3738	Gly-20 to Leu-28, Val-33 to Gly-41, Thr-43 to Gly-55, Val-58 to Arg-66.			
HOGCV93	HOGCV93R	1564	22 - 513	3739	Lys-7 to Thr-13, Asp-24 to Thr-30, Gly-39 to Glu-52, Leu-70 to Arg-76, Phe-87 to Tyr-92.			
HOGCY12	HOGCY12R	1565	2 - 235	3740	Lys-2 to Thr-8, Asp-19 to Thr-25, Gly-34 to Glu-47, Leu-65 to Arg-71.			
HOGCY58	HOGCY58R	1566	3 - 338	3741	Asn-5 to Gln-12, Gln-19 to Glu-25, Arg-78 to Glu-99, Thr-106 to Ala-111.			
HOGCY74	HOGCY74R	1567	3 - 260	3742	Arg-1 to Asn-8, Phe-18 to His-24, Asp-57 to Lys-62, Lys-76 to Asp-81.			
HOGDD29	HOGDD29R	1568	3 - 152	3743				
HOGDE77	HOGDE77R	1569	95 - 184	3744				
HOGDG03	HOGDG03R	1570	2 - 397	3745	Thr-9 to His-19, Leu-35 to Ala-46,			

HOGDG76	HOGDG76R	1571	3 - 497	3746	Arg-35 to Gly-40, His-51 to Lys-56, Phe-94 to Ser-99, Thr-102 to Gly-107, Pro-113 to Ser-120.	L0665: 3, H0682: 2, H0435: 2, L0751: 2, H0663: 1, L0021: 1, H0647: 1, L0806: 1, L0664: 1, H0683: 1, H0670: 1 and H0660: 1.		
HOGDI44	HOGDI44R	1572	1 - 342	3747	Gln-58 to Gln-64, Cys-73 to Arg-88.			
HOGDI49	HOGDI49R	1573	124 - 357	3748				
HOGDO25	HOGDO25R	1574	2 - 322	3749	Pro-38 to Met-44.			
HOGDO58	HOGDO58R	1575	74 - 244	3750	Pro-6 to Tyr-17, Val-39 to Gln-45.			
HOGDP10	HOGDP10R	1576	3 - 299	3751	Glu-3 to Glu-14.			
HOGDQ54	HOGDQ54R	1577	3 - 335	3752				
HOGDQ95	HOGDQ95R	1578	22 - 492	3753	Arg-9 to Val-17.			
HOGDR70	HOGDR70R	1579	48 - 470	3754	Arg-9 to Arg-18, Arg-27 to Arg-35, Arg-47 to Asp-55, Asp-78 to Lys-83.			
HOGDV93	HOGDV93R	1580	1 - 417	3755	Gly-1 to Ala-6, Glu-54 to Ile-62, Asp-89 to Thr-98.			
HOGEA27	HOGEA27R	1581	2 - 241	3756				
HOGED85	HOGED85R	1582	3 - 326	3757	Tyr-94 to Phe-99.			
HOGEK25	HOGEK25R	1583	2 - 325	3758				
HOGEN30	HOGEN30R	1584	2 - 325	3759	Leu-3 to Arg-19.			
HOGEN55	HOGEN55R	1585	2 - 226	3760				

HOGEP46	HOGEP46R	1586	3 - 212	3761	Gly-17 to Asn-27, Ser-51 to His-61.	L0521: 1, L0662: 1 and H0435: 1.		
HOGEP69	HOGEP69R	1587	2 - 223	3762				
HOGET60	HOGET60R	1588	2 - 376	3763		H0295: 8, H0617: 7, L0665: 7, H0435: 7, H0592: 6, H0494: 6, L0439: 6, L0751: 6, S0360: 5, S0046: 4, H0587: 4, H0012: 4, H0264: 4, L0662: 4, S0406: 4, H0586: 3, H0620: 3, H0031: 3, H0551: 3, S0440: 3, S0002: 3, L0763: 3, L0648: 3, L0649: 3, L0774: 3, L0659: 3, H0520: 3, H0547: 3, H0689: 3, H0660: 3, S0328: 3, S0330: 3, L0748: 3, L0754: 3, L0750: 3, H0294: 2, H0650: 2, H0341: 2, S0356: 2, S0132: 2, H0370: 2, H0333: 2, H0643: 2, L0623: 2, H0706: 2, H0081: 2, H0039: 2, H0553: 2, H0181: 2, H0068: 2, H0135: 2, H0040: 2, H0646: 2, L0640: 2,		

L0637: 2, L0641: 2, L0764: 2, L0804: 2, L0806: 2, L0776: 2, L0657: 2, L0809: 2, L0664: 2, H0519: 2, H0682: 2, H0670: 2, H0672: 2, L0744: 2, L0740: 2, S0434: 2, H0677: 2, H0483: 1, H0305: 1, H0638: 1, S0442: 1, S0358: 1, S0376: 1, S0410: 1, H0411: 1, H0550: 1, H0455: 1, H0600: 1, H0101: 1, H0575: 1, H0590: 1, H0618: 1, H0052: 1, H0234: 1, H0597: 1, H0121: 1, L0041: 1, H0123: 1, H0246: 1, H0290: 1, H0292: 1, H0428: 1, H0622: 1, T0023: 1, H0030: 1, H0316: 1, H0059: 1, H0100: 1, S0306: 1, T0090: 1, H0649: 1, S0210: 1, S0426: 1, L0646: 1, L0765: 1, L0771: 1, L0626: 1, L0768: 1, L0364: 1, L0766: 1,							

						L0375: 1, L0651: 1, L0378: 1, L0653: 1, L0655: 1, L0558: 1, L0635: 1, L0518: 1, L0383: 1, L0792: 1, L0663: 1, S0006: 1, H0696: 1, S0044: 1, S3014: 1, L0743: 1, L0752: 1, L0755: 1, L0731: 1, L0759: 1, H0216: 1, H0543: 1, S0424: 1 and H0506: 1.		
HOGEU84	HOGEU84R	1589	3 - 368	3764	Pro-8 to Asn-34, Ala-39 to Arg-53.	AR096: 1, AR104: 1, AR055: 0, AR061: 0, AR060: 0, AR089: 0 S0250: 1 and H0435: 1.		
HOGEW58	HOGEW58R	1590	1 - 417	3765				
HOGEW72	HOGEW72R	1591	256 - 333	3766				
HOGEZ03	HOGEZ03R	1592	52 - 144	3767				
HOGEZ27	HOGEZ27R	1593	2 - 307	3768				
HOHDI15	HOHDI15R	1594	3 - 170	3769				
HOOHB44	HOOHB44R	1595	128 - 313	3770	Ser-1 to Gln-6, Ser-51 to Thr-56.			
HOOHC27	HOOHC27R	1596	9 - 194	3771	Gly-4 to Lys-10.			
HOOHJ69	HOOHJ69R	1597	9 - 152	3772	Gly-4 to Lys-10.	H0637: 2, H0413: 1 and H0648: 1.		
HOOHK47	HOOHK47R	1598	126 - 260	3773				
HOOHL15	HOOHL15R	1599	60 - 383	3774				
HOOHL19	HOOHL19R	1600	14 - 205	3775	Pro-17 to Ser-24.			

HOOHL68	HOOHL68R	1601	271 - 570	3776			
					L0748: 11, L0666: 5, L0750: 5, L0805: 4, L0663: 4, L0664: 4, L0439: 4, L0662: 3, L0758: 3, L0005: 2, H0587: 2, H0318: 2, H0052: 2, H0024: 2, H0553: 2, L0770: 2, L0648: 2, L0766: 2, L0497: 2, L0665: 2, H0519: 2, H0648: 2, L0740: 2, L0731: 2, L0593: 2, H0677: 2, H0170: 1, H0583: 1, H0638: 1, H0586: 1, H0331: 1, H0486: 1, H0013: 1, H0156: 1, H0036: 1, L0040: 1, H0620: 1, S6028: 1, H0328: 1, H0615: 1, T0023: 1, S0036: 1, H0591: 1, H0040: 1, T0067: 1, S0472: 1, H0529: 1, L0761: 1, L0764: 1, L0771: 1, L0649: 1, L0803: 1, L0804: 1, L0775: 1, L0806: 1, L0655: 1, L0657: 1, L0659: 1, L0790: 1, H0144: 1,		

HOOHP84	HOOHP84R	1602	1 - 186	3777		L0438: 1, H0672: 1, H0522: 1, S0392: 1, L0747: 1, L0749: 1, L0756: 1, L0752: 1, H0445: 1, L0591: 1 and H0422: 1.		
HOOHQ09	HOOHQ09R	1603	161 - 313	3778	Lys-1 to Lys-13.			
HOOHQ83	HOOHQ83R	1604	67 - 399	3779	Pro-10 to Ser-37, Gln-41 to Thr-57, Arg-62 to Thr-68, Pro-80 to Lys-85, Gly-99 to Gly-106.			
HOOHR81	HOOHR81R	1605	336 - 500	3780				
HOOHS67	HOOHS67R	1606	69 - 281	3781				
HOOHS82	HOOHS82R	1607	53 - 145	3782				
HOOHT13	HOOHT13R	1608	3 - 194	3783	Glu-1 to Glu-11.			
HOOHX50	HOOHX50R	1609	17 - 163	3784				
HOOIA46	HOOIA46R	1610	3 - 239	3785		L0770: 12, H0657: 10, H0659: 9, L0776: 8, H0648: 8, L0755: 8, L0774: 7, S0410: 6, H0494: 6, L0769: 6, L0750: 6, S0408: 5, S0440: 5, L0775: 5, S0376: 4, S0360: 4, L0748: 4, L0777: 4, L0752: 4, L0759: 4, H0341: 3, S0358: 3,		

		H0616: 3, L0766: 3, L0740: 3, L0747: 3, L0731: 3, L0758: 3, S0026: 3, H0170: 2, H0556: 2, H0685: 2, H0656: 2, S0420: 2, S0444: 2, T0109: 2, H0156: 2, H0545: 2, L0471: 2, H0031: 2, H0040: 2, H0560: 2, L0065: 2, S0438: 2, L0763: 2, L0772: 2, L0764: 2, L0518: 2, L0783: 2, H0144: 2, S0374: 2, H0520: 2, H0658: 2, H0670: 2, L0753: 2, H0445: 2, S0434: 2, H0665: 2, S0194: 2, S0134: 1, S0116: 1, H0663: 1, L0481: 1, H0638: 1, H0125: 1, S0442: 1, H0351: 1, H0369: 1, H0550: 1, H0431: 1, H0331: 1, H0069: 1, S0346: 1, T0048: 1, S0182: 1, S0049: 1, H0563: 1, H0081: 1, H0620: 1, H0014: 1, H0373: 1, H0083: 1,				

					H0375: 1, H0428: 1, H0708: 1, H0634: 1, H0412: 1, H0413: 1, L0475: 1, H0386: 1, L0598: 1, H0529: 1, L0520: 1, L0762: 1, L0371: 1, L0638: 1, L0373: 1, L0646: 1, L0773: 1, L0521: 1, L0662: 1, L0805: 1, L0655: 1, L0517: 1, L0540: 1, L0542: 1, L0526: 1, L0809: 1, L0545: 1, L0791: 1, L0663: 1, L0665: 1, H0691: 1, H0547: 1, H0690: 1, H0435: 1, H0660: 1, H0651: 1, S0380: 1, S0406: 1, L0749: 1, L0780: 1, H0668: 1, H0653: 1, S0242: 1, S0276: 1, H0542: 1, H0422: 1 and H0506: 1.		
HOOIA57	HOOIA57R	1611	251 - 361	3786	L0803: 14, L0439: 9, L0752: 9, L0666: 7, L0659: 5, S0328: 5, L0756: 5, L0731: 5, L0794: 4, S0412: 4, S0360: 3, H0634: 3,		

		S0002: 3, L0805: 3, L0809: 3, L0438: 3, H0520: 3, L0748: 3, L0740: 3, L0758: 3, H0656: 2, S0418: 2, S0358: 2, H0013: 2, H0083: 2, S0022: 2, S0386: 2, L0776: 2, H0648: 2, L0602: 2, H0521: 2, S0028: 2, L0742: 2, L0596: 2, H0423: 2, H0170: 1, H0171: 1, H0657: 1, H0341: 1, H0669: 1, H0662: 1, H0638: 1, S0420: 1, S0376: 1, H0580: 1, S0007: 1, S0132: 1, L0717: 1, H0369: 1, H0600: 1, H0587: 1, H0497: 1, H0427: 1, L0021: 1, H0575: 1, S0010: 1, H0581: 1, H0421: 1, H0263: 1, T0115: 1, H0545: 1, L0471: 1, S0051: 1, H0510: 1, H0375: 1, S0003: 1, H0328: 1, H0428: 1, H0039: 1, H0622: 1, L0483: 1, H0031: 1,		

HOOIB34	HOOIB34R	1612	46 - 153	3787		H0553: 1, H0644: 1, H0628: 1, H0673: 1, S0364: 1, H0316: 1, H0598: 1, H0090: 1, H0087: 1, H0551: 1, T0067: 1, H0488: 1, H0623: 1, H0494: 1, L0475: 1, H0560: 1, H0509: 1, S0150: 1, H0641: 1, S0422: 1, S0426: 1, H0529: 1, L0770: 1, L0761: 1, L0627: 1, L0646: 1, L0773: 1, L0521: 1, L0768: 1, L0766: 1, L0527: 1, L0647: 1, L0789: 1, L0663: 1, S0428: 1, S0374: 1, H0519: 1, H0435: 1, H0659: 1, H0672: 1, H0518: 1, H0522: 1, H0134: 1, L0356: 1, L0745: 1, L0747: 1, L0779: 1, L0759: 1, L0589: 1, L0592: 1, L0608: 1, L0594: 1, S0026: 1, H0136: 1 and S0242: 1.		
HOOIB54	HOOIB54R	1613	2 - 199	3788					

HOOIF71	HOOIF71R	1614	3 - 389	3789				
HOOIG71	HOOIG71R	1615	2 - 301	3790	Ile-1 to Lys-7, Gly-13 to Lys-19, Pro-59 to Arg-76.			
HOOIK04	HOOIK04R	1616	2 - 172	3791	Val-50 to Arg-56.			
HOOIL33	HOOIL33R	1617	97 - 264	3792	Leu-41 to Ser-52.			
HOOIO53	HOOIO53R	1618	3 - 164	3793				
HOOIR94	HOOIR94R	1619	20 - 109	3794				
HOOJA64	HOOJA64R	1620	272 - 400	3795				
HOOJB36	HOOJB36R	1621	118 - 315	3796				
HOOJE93	HOOJE93R	1622	125 - 268	3797				
HOOJK91	HOOJK91R	1623	80 - 211	3798				
HOOJN84	HOOJN84R	1624	1 - 189	3799	Asp-48 to Thr-54, Glu-57 to Ser-63.	L0758: 14, L0747: 10, L0752: 10, L0731: 10, L0663: 9, H0547: 9, L0740: 9, L0666: 8, H0046: 7, S0126: 7, L0748: 7, H0539: 6, L0439: 6, L0759: 6, L0595: 6, H0543: 6, H0050: 5, H0031: 5, H0648: 5, S0328: 5, H0624: 4, H0657: 4, H0656: 4, S0007: 4, H0549: 4, H0550: 4, H0591: 4, H0616: 4, H0551: 4, L0769: 4, L0662: 4, L0659: 4, H0144: 4, L0438: 4,		

		L0749: 4, L0750: 4, L0755: 4, H0663: 3, S0418: 3, H0619: 3, L0717: 3, H0013: 3, L0163: 3, H0553: 3, H0090: 3, L0763: 3, L0770: 3, L0766: 3, L0774: 3, L0664: 3, L0665: 3, H0519: 3, H0521: 3, L0742: 3, L0591: 3, S0276: 3, H0171: 2, H0341: 2, S0356: 2, S0360: 2, H0393: 2, S0300: 2, H0156: 2, H0150: 2, H0011: 2, H0687: 2, S0003: 2, H0328: 2, L0483: 2, H0634: 2, H0494: 2, H0560: 2, H0561: 2, H0646: 2, L0638: 2, L0646: 2, L0374: 2, L0764: 2, L0776: 2, L0655: 2, L0657: 2, H0520: 2, H0660: 2, H0134: 2, L0605: 2, L0593: 2, H0542: 2, S6024: 1, H0583: 1, S0116: 1, H0483: 1, S0420: 1, S0358: 1, S0408: 1,				

		H0580: 1, S0045: 1, H0440: 1, H0431: 1, T0104: 1, H0600: 1, H0632: 1, H0559: 1, H0485: 1, H0069: 1, S0280: 1, L0021: 1, H0042: 1, H0706: 1, H0505: 1, H0581: 1, H0421: 1, H0052: 1, L0471: 1, S0051: 1, H0266: 1, H0267: 1, S0316: 1, H0028: 1, H0252: 1, H0615: 1, H0644: 1, H0169: 1, H0598: 1, H0163: 1, H0038: 1, H0372: 1, H0412: 1, H0413: 1, H0623: 1, T0004: 1, S0372: 1, S0448: 1, S0440: 1, S0150: 1, S0344: 1, S0422: 1, L0598: 1, L0369: 1, L0520: 1, L0762: 1, L0761: 1, L0648: 1, L0521: 1, L0363: 1, L0649: 1, L0650: 1, L0523: 1, L0806: 1, L0653: 1, L0606: 1, L0661: 1, L0527: 1, L0809: 1, H0658: 1,			

						H0672: 1, S0330: 1, S0152: 1, H0696: 1, S0406: 1, H0555: 1, H0478: 1, S0432: 1, L0786: 1, S0260: 1, H0445: 1, L0366: 1, S0026: 1, H0667: 1, H0423: 1, S0424: 1, S0446: 1 and H0008: 1.		
HOOJP58	HOOJP58R	1625	93 - 248	3800				
HOOJR60	HOOJR60R	1626	160 - 306	3801		H0648: 2, H0436: 2, L0748: 2, S0360: 1, L0766: 1, L0803: 1 and L0779: 1.		
HOOJR72	HOOJR72R	1627	77 - 265	3802				
HOOJS84	HOOJS84R	1628	78 - 290	3803				
HOOJT32	HOOJT32R	1629	1 - 237	3804				
HOOJT65	HOOJT65R	1630	2 - 340	3805	Ala-2 to Asp-10.			
HOOJV78	HOOJV78R	1631	318 - 560	3806		H0486: 1 and H0648: 1.		
HOOJX42	HOOJX42R	1632	317 - 463	3807				
HOOJX80	HOOJX80R	1633	106 - 267	3808	Arg-11 to Pro-22, Asn-42 to Lys-48.	L0731: 2, H0483: 1, T0007: 1, T0039: 1, H0562: 1, L0769: 1, L0766: 1, H0670: 1, H0648: 1, L0756: 1, L0755: 1, L0758: 1, L0759: 1 and L0485: 1.		
HOOJY17	HOOJY17R	1634	147 - 479	3809	Pro-8 to Phe-18.			

HOOJY41	HOOJY41R	1635	51 - 347	3810				
HOOJY44	HOOJY44R	1636	2 - 184	3811	Gln-1 to Cys-7, Asn-14 to Lys-22, Arg-29 to Leu-34, Glu-46 to Leu-54.			
HOOJY80	HOOJY80R	1637	1 - 462	3812	Ala-1 to Pro-6, Ala-22 to Glu-27, Glu-36 to Ser-45, Glu-62 to Gly-67, Gln-74 to Phe-83, Thr-90 to Ser-96, His-105 to Pro-116.			
HOOJY92	HOOJY92R	1638	3 - 437	3813		H0547: 16, H0090: 11, H0543: 10, H0542: 9, H0341: 8, L0471: 8, H0551: 8, S0358: 7, H0561: 7, S0126: 7, H0521: 7, H0657: 5, H0013: 5, S0440: 5, H0529: 5, H0144: 5, H0519: 5, H0265: 4, S0040: 4, H0264: 4, H0560: 4, H0520: 4, S0027: 4, L0731: 4, L0591: 4, L0592: 4, L0595: 4, H0423: 4, S0424: 4, H0170: 3, H0686: 3, H0638: 3, S0360: 3, S0410: 3, H0580: 3, H0486: 3,		

		H0318: 3, H0510: 3, H0266: 3, H0553: 3, H0591: 3, H0040: 3, H0634: 3, S0150: 3, L0803: 3, L0657: 3, H0435: 3, S0152: 3, L0740: 3, L0747: 3, S0436: 3, L0588: 3, H0556: 2, S0116: 2, H0663: 2, S0356: 2, S0354: 2, S0376: 2, S0046: 2, H0393: 2, H0642: 2, H0574: 2, T0109: 2, H0635: 2, S0010: 2, T0110: 2, H0012: 2, H0083: 2, S0214: 2, H0038: 2, T0041: 2, T0042: 2, H0494: 2, H0647: 2, S0422: 2, S0002: 2, L0554: 2, H0660: 2, H0518: 2, S0406: 2, L0593: 2, H0667: 2, H0624: 1, H0171: 1, H0159: 1, S0114: 1, H0656: 1, H0484: 1, H0661: 1, H0664: 1, H0450: 1, S0442: 1, S0045: 1, H0619: 1, H0550: 1, S0222: 1,				

		H0600: 1, H0586: 1, T0039: 1, T0040: 1, H0244: 1, H0069: 1, H0575: 1, H0004: 1, S0665: 1, H0581: 1, H0421: 1, S0049: 1, H0052: 1, T0115: 1, H0327: 1, H0572: 1, H0050: 1, H0620: 1, H0355: 1, S6028: 1, S0316: 1, H0290: 1, H0286: 1, H0615: 1, H0039: 1, H0622: 1, H0031: 1, H0316: 1, S0036: 1, H0616: 1, H0412: 1, H0056: 1, S0038: 1, S0112: 1, H0128: 1, H0429: 1, H0334: 1, H0625: 1, H0386: 1, H0509: 1, H0641: 1, H0633: 1, S0210: 1, S0426: 1, L0761: 1, L0800: 1, L0764: 1, L0773: 1, L0775: 1, L0663: 1, S0006: 1, S0148: 1, L0438: 1, H0593: 1, H0689: 1, H0670: 1, H0666: 1, H0648: 1, S0328: 1, S0330: 1,				

						S0378: 1, H0696: 1, H0134: 1, H0555: 1, S0037: 1, S0206: 1, L0749: 1, S0031: 1, S0260: 1, H0445: 1, S0434: 1, L0599: 1, L0594: 1, H0422: 1 and S0456: 1.		
HOOKK83	HOOKK83R	1639	107 - 367	3814				
HOOKN43	HOOKN43R	1640	118 - 453	3815	Asp-1 to Lys-22.			
HOOKN71	HOOKN71R	1641	210 - 344	3816		H0657: 3, L0717: 2, H0421: 2, L0766: 2, L0666: 2, L0756: 2, L0759: 2, H0717: 1, H0587: 1, H0156: 1, L0021: 1, H0581: 1, H0014: 1, H0252: 1, S0422: 1, L0662: 1, L0794: 1, L0655: 1, L0809: 1, L0543: 1, L0791: 1, L0665: 1, H0658: 1, H0670: 1, H0648: 1, H0672: 1, H0696: 1, L0780: 1, S0434: 1 and H0506: 1.		
HOPJA09	HOPJA09R	1642	14 - 196	3817	Pro-20 to Gly-38.			
HOPJF95	HOPJF95R	1643	107 - 571	3818				
HOPJG60	HOPJG60R	1644	207 - 461	3819	Gly-69 to Glu-78.	L0775: 5, L0776: 5, L0747: 5, L0604: 5, L0769: 4, L0805: 4,		

					L0777: 3, L0759: 3, L0774: 2, L0809: 2, L0758: 2, H0341: 1, H0484: 1, S0358: 1, S0444: 1, S0360: 1, S6026: 1, S0278: 1, H0156: 1, H0038: 1, H0616: 1, H0102: 1, L0770: 1, L0766: 1, L0804: 1, L0657: 1, L0789: 1, H0684: 1, H0696: 1, S0044: 1, L0756: 1 and L0780: 1.		
HOPJG66	HOPJG66R	1645	2 - 136	3820	Pro-4 to Ser-29, Pro-31 to Ser-38.	H0547: 41, L0751: 26, H0520: 18, S0344: 12, L0731: 11, T0006: 9, L0794: 9, L0753: 8, L0593: 8, S0278: 6, L0809: 6, H0135: 5, S0142: 5, L0800: 5, L0665: 5, L0743: 5, L0747: 5, H0024: 4, S0328: 4, L0759: 4, H0661: 3, H0594: 3, H0617: 3, L0657: 3, H0658: 3, H0666: 3, L0750: 3, L0752: 3, H0352: 3, H0664: 2, H0662: 2, H0041: 2, H0123: 2, H0081: 2,		

		H0050: 2, H0099: 2, H0494: 2, S0002: 2, L0769: 2, L0806: 2, L0517: 2, L0382: 2, H0684: 2, H0660: 2, H0539: 2, S0152: 2, L0748: 2, L0587: 2, L0595: 2, H0294: 1, H0656: 1, H0484: 1, H0669: 1, H0208: 1, H0619: 1, H0586: 1, H0333: 1, H0427: 1, H0052: 1, H0251: 1, H0546: 1, H0545: 1, H0012: 1, H0688: 1, H0181: 1, H0606: 1, H0334: 1, H0646: 1, S0144: 1, S0426: 1, L0762: 1, L0640: 1, L0763: 1, L0637: 1, L0662: 1, L0386: 1, L0803: 1, L0804: 1, L0774: 1, L0378: 1, L0805: 1, L0629: 1, L0558: 1, L0659: 1, L0783: 1, L0791: 1, H0689: 1, H0648: 1, S0330: 1, S0332: 1, H0436: 1, H0540: 1, S0028: 1, L0744: 1,				

HOPJG79	HOPJG79R	1646	3 - 542	3821	Ala-83 to Arg-91, Trp-99 to Tyr-105, Tyr-123 to Glu-128.	L0755: 1, L0757: 1, L0758: 1 and S0276: 1.			
HOPJG89	HOPJG89R	1647	166 - 597	3822	Gly-2 to Ala-13.				
HOPJH17	HOPJH17R	1648	321 - 464	3823					
HOPJH38	HOPJH38R	1649	148 - 285	3824		S0412: 22, L0662: 19, L0777: 14, S0010: 11, S0222: 9, S6028: 9, L0750: 9, T0010: 8, L0659: 8, L0747: 8, L0756: 8, L0663: 7, L0439: 7, H0051: 6, L0518: 6, L0754: 6, L0752: 6, S0280: 5, H0575: 5, S0358: 4, S0346: 4, L0753: 4, H0170: 3, H0662: 3, S0360: 3, H0427: 3, L0471: 3, H0373: 3, L0638: 3, L0637: 3, L0764: 3, L0774: 3, L0809: 3, L0666: 3, S0310: 3, H0672: 3, H0696: 3, L0731: 3, H0506: 3, H0713: 2, S0408: 2, H0411: 2, H0455: 2, H0574: 2, S0414: 2, H0486: 2,			

		H0036: 2, S0049: 2, H0052: 2, H0327: 2, H0687: 2, H0428: 2, H0553: 2, H0644: 2, H0038: 2, L0520: 2, L0762: 2, L0770: 2, L0653: 2, L0517: 2, S0044: 2, L0442: 1, H0583: 1, L0443: 1, S0110: 1, S0282: 1, S0400: 1, H0661: 1, S0348: 1, S0356: 1, S0444: 1, H0329: 1, S0007: 1, H0619: 1, S6026: 1, S0300: 1, L0717: 1, S6022: 1, H0550: 1, H0592: 1, H0587: 1, H0599: 1, H0042: 1, H0590: 1, H0318: 1, H0309: 1, H0545: 1, H0563: 1, H0564: 1, H0123: 1, H0019: 1, S0050: 1, L0163: 1, S0388: 1, H0356: 1, H0328: 1, H0688: 1, H0039: 1, T0023: 1, H0031: 1, H0111: 1, H0169: 1, S0364: 1, L0455: 1, H0135: 1, H0163: 1,				

HOPJH65	HOPJH65R	1650	6 - 497	3825	Ala-1 to Gly-11, Asn-20 to Pro-25.	T0067: 1, T0069: 1, T0004: 1, H0100: 1, S0112: 1, L0370: 1, L0598: 1, L0769: 1, L0630: 1, L0800: 1, L0648: 1, L0363: 1, L0768: 1, L0649: 1, L0803: 1, L0775: 1, L0375: 1, L0651: 1, L0784: 1, L0523: 1, L0805: 1, L0776: 1, L0527: 1, L0657: 1, L0635: 1, L0783: 1, L0789: 1, L0532: 1, L0664: 1, H0691: 1, T0068: 1, S0148: 1, H0693: 1, H0520: 1, H0593: 1, H0689: 1, H0684: 1, S0330: 1, S0380: 1, S0174: 1, H0555: 1, L0612: 1, L0743: 1, L0748: 1, L0751: 1, L0749: 1, L0779: 1, L0759: 1, L0689: 1, S0434: 1, L0604: 1, L0366: 1, S0106: 1 and S0021: 1.		
HOPJM63	HOPJM63R	1651	101 - 250	3826	Pro-20 to Glu-25,	S0010: 1, H0327: 1,			

HOPJU10	HOPJU10R	1652	78 - 269	3827	Lys-31 to Gly-36.	H0039: 1, H0622: 1, S0464: 1, L0803: 1, H0684: 1 and H0670: 1.		
					Phe-15 to Ser-22.	L0665: 7, L0747: 7, L0662: 6, L0766: 6, L0655: 5, L0659: 5, S0126: 5, L0717: 4, H0370: 4, L0763: 4, L0770: 4, L0646: 4, H0521: 4, L0748: 4, S0360: 3, H0009: 3, S0142: 3, S0344: 3, L0771: 3, L0774: 3, L0775: 3, L0663: 3, L0664: 3, L0740: 3, L0751: 3, L0750: 3, L0758: 3, L0601: 3, H0265: 2, H0657: 2, S0418: 2, S0420: 2, S0045: 2, T0039: 2, H0024: 2, T0010: 2, H0413: 2, S0144: 2, S0210: 2, L0667: 2, L0372: 2, L0642: 2, L0765: 2, L0653: 2, L0383: 2, L0666: 2, L0744: 2, L0439: 2, L0754: 2, L0756: 2, L0731: 2, L0599: 2, H0543: 2, L0615: 1,		

		H0556: 1, H0295: 1, S0114: 1, H0656: 1, L0778: 1, S0282: 1, H0255: 1, H0661: 1, H0402: 1, S0354: 1, S0358: 1, S0376: 1, H0351: 1, S0222: 1, H0600: 1, H0586: 1, H0333: 1, H0250: 1, T0082: 1, H0318: 1, H0421: 1, H0052: 1, L0738: 1, H0327: 1, H0051: 1, H0083: 1, S0003: 1, S0022: 1, S0214: 1, H0092: 1, T0023: 1, L0483: 1, T0006: 1, H0030: 1, H0628: 1, H0181: 1, H0169: 1, H0090: 1, H0058: 1, L0351: 1, T0041: 1, H0494: 1, S0015: 1, L0065: 1, S0426: 1, L0640: 1, L0769: 1, L0772: 1, L0641: 1, L0374: 1, L0764: 1, L0773: 1, L0648: 1, L0626: 1, L0768: 1, L0649: 1, L0784: 1, L0378: 1, L0806: 1, L0776: 1,				

					L0807: 1, L0657: 1, L0656: 1, L0783: 1, S0052: 1, S0428: 1, L0438: 1, H0547: 1, H0690: 1, H0682: 1, H0684: 1, H0670: 1, H0660: 1, H0672: 1, H0522: 1, H0187: 1, H0576: 1, S0027: 1, S0206: 1, L0743: 1, L0757: 1, L0605: 1, L0590: 1, L0591: 1, L0581: 1, L0595: 1, S0026: 1, H0665: 1, H0667: 1, H0542: 1, H0423: 1 and H0352: 1.		
						H0445: 13, H0255: 11, L0666: 7, H0575: 5, H0059: 4, S0344: 4, L0655: 4, H0521: 4, H0522: 4, L0748: 4, L0751: 4, H0556: 3, S0278: 3, H0013: 3, H0181: 3, H0617: 3, S0142: 3, H0658: 3, H0660: 3, L0439: 3, H0423: 3, S0116: 2, H0341: 2, S0360: 2, H0580: 2, H0581: 2, H0014: 2, H0087: 2,		
			3828	Arg-5 to His-22, Ser-59 to Ala-69.			
		1 - 207					
	1653						
HOPJX48R							
HOPJX48							

		L0663: 2, L0664: 2, L0665: 2, H0684: 2, L0741: 2, L0743: 2, H0170: 1, H0171: 1, H0265: 1, H0583: 1, H0657: 1, H0656: 1, L0470: 1, H0254: 1, H0664: 1, H0662: 1, S0420: 1, S0408: 1, H0393: 1, H0392: 1, H0613: 1, H0333: 1, L0622: 1, H0101: 1, H0250: 1, H0427: 1, L0021: 1, H0253: 1, S0346: 1, H0421: 1, H0596: 1, H0150: 1, H0620: 1, H0024: 1, H0428: 1, H0553: 1, H0169: 1, H0674: 1, S0366: 1, H0163: 1, H0040: 1, H0616: 1, H0063: 1, H0026: 1, H0517: 1, L0640: 1, L0770: 1, L0769: 1, L0761: 1, L0773: 1, L0559: 1, L0659: 1, L0790: 1, H0144: 1, H0593: 1, H0690: 1, H0709: 1, H0696: 1, H0187: 1, L0744: 1,				

						S0031: 1 and H0543: 1.		
HOPJY50	HOPJY50R	1654	273 - 395	3829				
HOPJZ59	HOPJZ59R	1655	2 - 163	3830	Pro-35 to Arg-48.			
HOPKA06	HOPKA06R	1656	2 - 676	3831	Arg-19 to Tyr-24, Asp-75 to Glu-87, Asn-102 to Cys-109, Ser-113 to Lys-118, Tyr-154 to Ser-169.	AR096: 4, AR089: 3, AR061: 1, AR055: 1, AR060: 1, AR104: 1 H0684: 2 and L0731: 1.		
HOPKC65	HOPKC65R	1657	26 - 232	3832	Leu-39 to Ser-51.			
HOPKD31	HOPKD31R	1658	3 - 191	3833	Ser-50 to Pro-57.			
HOPKG16	HOPKG16R	1659	1 - 456	3834	Asn-80 to Gly-86.			
HOPKG47	HOPKG47R	1660	1 - 579	3835	Pro-6 to Thr-34, Asp-57 to Gly-62, Gly-77 to Glu-83, Lys-108 to Asp-116, Met-145 to Arg-159.			
HOPKG83	HOPKG83R	1661	1 - 663	3836	Ser-72 to Ala-78, Asp-94 to Gly-100, Thr-104 to Asp-111, Ser-117 to Arg-133, Glu-138 to Lys-144, Lys-158 to Asp-165.			
HOPKK38	HOPKK38R	1662	3 - 455	3837	Ser-33 to Pro-42, Lys-53 to Cys-61.	H0494: 6, H0556: 5, H0265: 3, H0656: 3, H0618: 3, H0295: 2, H0255: 2, H0392: 2, H0575: 2, H0253: 2, H0052: 2, H0024: 2, H0617: 2, H0087: 2,		

		L0565: 2, H0547: 2, H0521: 2, L0744: 2, L0439: 2, H0136: 2, H0543: 2, H0224: 1, H0225: 1, H0585: 1, S0114: 1, H0341: 1, H0484: 1, H0483: 1, H0671: 1, S0418: 1, S0354: 1, S0408: 1, S0007: 1, S0045: 1, H0261: 1, H0550: 1, H0586: 1, H0587: 1, H0497: 1, H0643: 1, H0257: 1, H0559: 1, H0485: 1, H0486: 1, S0346: 1, T0048: 1, T0071: 1, H0309: 1, H0041: 1, H0081: 1, H0050: 1, H0012: 1, H0620: 1, H0051: 1, S0388: 1, H0071: 1, H0083: 1, H0354: 1, H0594: 1, H0266: 1, H0179: 1, H0271: 1, H0292: 1, H0428: 1, H0424: 1, H0181: 1, H0135: 1, H0090: 1, H0063: 1, H0488: 1, H0433: 1, H0100: 1, T0041: 1, S0440: 1,			

HOPKN14	HOPKN14R	1663	2 - 460	3838	Gly-63 to Ala-69, Gly-104 to Leu-110, Gly-130 to Gly-136.	S0142: 1, H0538: 1, L0769: 1, L0764: 1, L0803: 1, L0809: 1, H0593: 1, H0683: 1, H0684: 1, H0435: 1, S0044: 1, L0747: 1, S0031: 1, H0445: 1, L0593: 1 and L0601: 1.		
HOPKN67	HOPKN67R	1664	22 - 483	3839				
HOPKO04	HOPKO04RA	1665	170 - 319	3840		L0803: 6, L0731: 4, S0440: 3, L0662: 3, L0809: 3, L0665: 3, S0276: 3, H0486: 2, H0318: 2, L0794: 2, L0805: 2, L0776: 2, L0663: 2, H0684: 2, L0740: 2, L0759: 2, L0592: 2, H0624: 1, L0448: 1, H0341: 1, S0282: 1, H0663: 1, S0360: 1, H0580: 1, L0468: 1, H0587: 1, H0427: 1, H0575: 1, S0010: 1, L0471: 1, H0644: 1, H0383: 1, H0169: 1, L0456: 1, H0090: 1, H0264: 1,		

HOPKO61	HOPKO61R	1666	1 - 405	3841		H0412: 1, H0561: 1, S0150: 1, S0002: 1, H0529: 1, L0638: 1, L5565: 1, L0372: 1, L0649: 1, L0388: 1, L0659: 1, L0783: 1, L0789: 1, L0791: 1, H0519: 1, S0380: 1, H0522: 1, H0436: 1, L0747: 1, L0752: 1, L0757: 1, L0599: 1, H0542: 1, H0543: 1 and H0422: 1.		
HOPKP45	HOPKP45R	1667	282 - 536	3842				
HOPKQ20	HOPKQ20R	1668	19 - 402	3843	Ser-19 to Arg-29, Asp-37 to Val-43, Ala-75 to Leu-80, Thr-96 to Arg-111.			
HOPKQ82	HOPKQ82R	1669	1 - 519	3844				
HOPKR56	HOPKR56R	1670	3 - 173	3845		L0439: 15, L0666: 8, S0222: 6, L0794: 5, L0638: 3, L0805: 3, L0664: 3, L0758: 3, L0592: 3, S0010: 2, L0770: 2, L0438: 2, H0624: 1, H0170: 1, S6024: 1, H0441: 1, S0414: 1, H0052: 1, H0572: 1, S6028: 1,		

						H0688: 1, H0616: 1, L0769: 1, L0768: 1, L0803: 1, L0774: 1, L0776: 1, L0659: 1, L0809: 1, L0789: 1, L0792: 1, H0519: 1, H0684: 1, L0745: 1, L0747: 1, L0756: 1, L0786: 1, L0753: 1, L0731: 1, L0759: 1 and L0366: 1.		
HOPKU33	HOPKU33R	1671	2 - 274	3846				
HOVBH23	HOVBH23R	1672	2 - 136	3847	Gly-1 to Val-7.			
HOVBK37	HOVBK37R	1673	237 - 551	3848	Pro-7 to Trp-14.	L0794: 16, L0809: 6, S0360: 4, H0617: 3, L0803: 3, S0114: 2, H0288: 2, H0688: 2, H0494: 2, L0375: 2, L0731: 2, L0588: 2, H0556: 1, S0134: 1, H0484: 1, S0420: 1, H0637: 1, H0441: 1, H0370: 1, H0438: 1, H0592: 1, T0109: 1, S0010: 1, H0150: 1, H0009: 1, H0081: 1, H0271: 1, H0428: 1, S0368: 1, H0424: 1, H0181: 1, H0124: 1, S0438: 1, S0440: 1,			

						S0144: 1, S0142: 1, S0344: 1, L0637: 1, L5566: 1, L0761: 1, L0764: 1, L0648: 1, L0662: 1, L0364: 1, L0766: 1, L5574: 1, L0805: 1, L0783: 1, L0647: 1, L0789: 1, L0665: 1, H0520: 1, H0547: 1, H0670: 1, H0660: 1, H0648: 1, S0380: 1, H0521: 1, H0555: 1, S3012: 1, L0748: 1, L0779: 1, L0780: 1, L0757: 1, L0759: 1 and H0352: 1.		
HOVBK49	HOVBK49R	1674	3 - 86	3849	His-7 to Lys-20.			
HOVBS15	HOVBS15R	1675	144 - 404	3850	Glu-13 to Trp-32, Pro-34 to Asn-45.			
HOVBX41	HOVBX41R	1676	41 - 349	3851				
HOVCL23	HOVCL23R	1677	342 - 524	3852		S0360: 2, H0497: 2, H0333: 1, H0004: 1, H0428: 1, H0674: 1, S0422: 1, L0763: 1, L0803: 1, H0648: 1 and S0276: 1.		
HOVCN03	HOVCN03R	1678	2 - 127	3853	Gly-1 to Glu-7, Gly-29 to Ala-36.			
HOVCO26	HOVCO26R	1679	395 - 580	3854				
HOVCU89	HOVCU89R	1680	3 - 578	3855	Lys-63 to Ser-69,			

HOVCV33	HOVCV33R	1681	1 - 471	3856	Tyr-95 to His-102, Tyr-105 to Leu-111. Ser-15 to Tyr-21, Gly-32 to Arg-37.				
HOVCW45	HOVCW45R	1682	2 - 226	3857		H0615: 2, L0748: 2, H0656: 1, S0007: 1, H0486: 1, H0041: 1, H0355: 1, S0250: 1, S0003: 1, H0688: 1, H0428: 1, H0622: 1, T0042: 1, L0768: 1, L0657: 1, L0526: 1, H0702: 1, L0565: 1, H0547: 1, H0519: 1, S0152: 1, S0390: 1, L0745: 1, L0749: 1, L0779: 1, L0588: 1, L0608: 1 and L0593: 1.			
HOVCY68	HOVCY68R	1683	333 - 551	3858					
HOVCZ45	HOVCZ45R	1684	53 - 220	3859	Ile-32 to Arg-37.				
HOVDB43	HOVDB43R	1685	110 - 289	3860					
HOVDB61	HOVDB61R	1686	34 - 204	3861					
HOVDB62	HOVDB62R	1687	1 - 270	3862					
HOVDB65	HOVDB65R	1688	37 - 498	3863					
HOVDD26	HOVDD26R	1689	24 - 257	3864					
HOVDE46	HOVDE46R	1690	253 - 393	3865	Asp-1 to Lys-6.				
HOVDG60	HOVDG60R	1691	92 - 184	3866					
HOVDG71	HOVDG71R	1692	74 - 154	3867					
HOVDH09	HOVDH09R	1693	3 - 365	3868	Pro-1 to Tyr-8,				

					Gln-14 to Gln-19, Arg-25 to Glu-37, Asn-44 to Arg-50, Glu-67 to Leu-75, Thr-105 to Gly-114.			
HOVDH75	HOVDH75R	1694	43 - 348	3869				
HOVDU91	HOVDU91R	1695	3 - 233	3870		L0794: 10, L0803: 7, L0747: 6, H0657: 5, H0597: 4, H0617: 4, L0764: 4, L0809: 4, L0758: 4, L0759: 4, L0800: 3, L0804: 3, L0775: 3, H0659: 3, H0543: 3, H0231: 2, L0471: 2, H0673: 2, H0674: 2, L0763: 2, L0770: 2, L0769: 2, L0768: 2, L0649: 2, L0375: 2, L0776: 2, H0658: 2, L0750: 2, L0779: 2, L0755: 2, L0731: 2, L0757: 2, L0596: 2, L0588: 2, S0026: 2, H0170: 1, H0483: 1, H0661: 1, H0402: 1, H0459: 1, S0360: 1, H0639: 1, L0717: 1, H0392: 1, H0607: 1, H0333: 1, H0486: 1, H0318: 1,			

					H0251: 1, H0184: 1, H0045: 1, H0014: 1, S0388: 1, S0051: 1, H0594: 1, H0188: 1, H0687: 1, L0052: 1, H0328: 1, H0428: 1, H0181: 1, H0032: 1, H0090: 1, H0087: 1, H0413: 1, H0561: 1, S0372: 1, H0647: 1, S0144: 1, S0002: 1, H0026: 1, L0761: 1, L0627: 1, L0648: 1, L0766: 1, L0774: 1, L0805: 1, L0656: 1, L0659: 1, L0636: 1, L0383: 1, L0666: 1, L0663: 1, L0665: 1, S0428: 1, H0689: 1, H0670: 1, H0539: 1, S0013: 1, S0174: 1, L0751: 1, L0777: 1, L0752: 1, H0445: 1, L0608: 1, L0595: 1 and H0136: 1.	
HOVDV70	HOVDV70R	1696	60 - 293	3871	Ile-12 to Gln-17.	L0752: 3, L0731: 3, L0747: 2, L0753: 2, H0265: 1, S0116: 1, S0420: 1, H0428: 1, L0769: 1, L0767: 1,	

HOVDW60	HOVDW60R	1697	64 - 264	3872	Tyr-22 to Ala-28.	L0766: 1, L0775: 1, L0776: 1, H0555: 1, L0742: 1, L0748: 1, L0757: 1 and L0759: 1.	H0428: 1 and S3014: 1.	
HOVDZ66	HOVDZ66R	1698	99 - 257	3873	Gly-40 to His-48.		H0428: 2	
HOVEA43	HOVEA43R	1699	247 - 396	3874				
HOVEB25	HOVEB25R	1700	169 - 363	3875	Ala-20 to Gln-25.			
HOVEE84	HOVEE84R	1701	410 - 589	3876	Ser-7 to Trp-13, Phe-19 to Ala-25.			
HOVEE92	HOVEE92R	1702	3 - 143	3877		S0474: 66, L0439: 16, H0547: 15, L0748: 15, L0731: 10, S0360: 9, L0770: 9, S0408: 8, S0358: 7, L0771: 7, L0775: 7, L0747: 6, L0592: 6, H0428: 5, S0438: 5, L0659: 5, L0664: 5, L0665: 5, L0752: 5, L0757: 5, H0506: 5, S0007: 4, H0549: 4, S0440: 4, L0769: 4, L0768: 4, L0774: 4, L0663: 4, H0519: 4, S0152: 4, L0750: 4, L0779: 4, L0755: 4, L0759: 4, L0591: 4, L0595: 4, S0444: 3, H0510: 3, H0615: 3, H0551: 3,		

		H0100: 3, L0598: 3, L0638: 3, L0766: 3, S0380: 3, L0594: 3, H0341: 2, S0420: 2, S0442: 2, H0722: 2, L0717: 2, H0550: 2, S0222: 2, H0587: 2, H0574: 2, H0632: 2, H0013: 2, H0575: 2, H0581: 2, H0544: 2, H0012: 2, H0687: 2, H0628: 2, S0036: 2, H0509: 2, L0637: 2, L0764: 2, L0773: 2, L0803: 2, L0375: 2, L0806: 2, L0783: 2, L0666: 2, H0520: 2, H0684: 2, H0659: 2, H0521: 2, L0745: 2, L0756: 2, S0436: 2, L0596: 2, L0593: 2, L0362: 2, S0194: 2, H0543: 2, H0624: 1, H0170: 1, H0171: 1, H0717: 1, H0657: 1, H0671: 1, H0663: 1, H0664: 1, H0459: 1, S0356: 1, S0410: 1, H0637: 1, S0476: 1, H0645: 1, S6026: 1,				

		S0300: 1, H0369: 1, H0431: 1, H0586: 1, H0497: 1, H0331: 1, L0021: 1, S0049: 1, H0184: 1, L0738: 1, H0545: 1, H0046: 1, H0563: 1, H0123: 1, H0050: 1, L0471: 1, H0620: 1, H0014: 1, S0388: 1, S0051: 1, H0356: 1, H0266: 1, S0003: 1, H0039: 1, H0622: 1, T0006: 1, H0617: 1, S0366: 1, H0090: 1, H0040: 1, H0616: 1, S0038: 1, T0041: 1, H0494: 1, S0014: 1, S0150: 1, L0369: 1, L0640: 1, L0763: 1, L5565: 1, L0761: 1, L0373: 1, L0372: 1, L0646: 1, L0521: 1, L0662: 1, L0804: 1, L0651: 1, L0652: 1, L0776: 1, L0527: 1, L0657: 1, L0526: 1, L0384: 1, L0809: 1, L0545: 1, L0790: 1, L0792: 1, H0144: 1, L0438: 1,				

						H0593: 1, S0126: 1, H0682: 1, H0660: 1, H0648: 1, S0328: 1, H0539: 1, S0378: 1, S0350: 1, H0696: 1, S0028: 1, S0206: 1, L0740: 1, L0777: 1, L0758: 1, S0434: 1, H0217: 1, S0192: 1, S0412: 1 and S0456: 1.		
HOVEF34	HOVEF34R	1703	288 - 497	3878				
HOVEF81	HOVEF81R	1704	1 - 393	3879	Gln-4 to Gln-10, Lys-35 to Ala-60, Pro-66 to Ser-79.	L0750: 11, L0740: 7, L0747: 5, H0341: 4, L0757: 4, H0641: 3, L0766: 3, L0748: 3, L0754: 3, L0752: 3, L0593: 3, H0171: 2, S0134: 2, S0442: 2, S0010: 2, H0428: 2, H0538: 2, L0770: 2, L0774: 2, L0776: 2, L0517: 2, L0438: 2, H0519: 2, H0684: 2, L0777: 2, L0755: 2, L0731: 2, L0758: 2, S0026: 2, H0170: 1, T0002: 1, S0114: 1, S0116: 1, H0663: 1, S0358: 1, S0360: 1, S0007: 1, S0046: 1,		

HOVEG73	HOVEG73R	1705	3 - 290	3880	Ser-9 to Gly-17, Ser-20 to Pro-26, Arg-32 to His-41.	H0411: 1, H0592: 1, H0486: 1, H0013: 1, L0022: 1, H0575: 1, H0581: 1, H0052: 1, H0251: 1, H0012: 1, H0620: 1, H0594: 1, H0398: 1, S0036: 1, H0090: 1, H0038: 1, H0040: 1, H0087: 1, L0475: 1, L0520: 1, L0630: 1, L0521: 1, L0662: 1, L0522: 1, L0803: 1, L0651: 1, L0652: 1, L0655: 1, L0661: 1, L0783: 1, L0809: 1, L0789: 1, L0666: 1, H0689: 1, H0682: 1, H0659: 1, H0670: 1, S0330: 1, H0539: 1, H0436: 1, L0605: 1, L0366: 1, S0276: 1, H0542: 1 and H0423: 1.		
HOVEJ15	HOVEJ15R	1706	160 - 468	3881		L0809: 8, L0794: 5, L0439: 5, L0758: 5, H0617: 4, L0438: 4, L0754: 4, L0731: 4,		

HOVEL51	HOVEL51R	1707	60 - 209	3882	Ser-13 to Val-21, Thr-45 to Ser-50.	H0295: 3, L0776: 3, H0619: 2, H0441: 2, H0253: 2, H0545: 2, H0188: 2, H0687: 2, H0428: 2, H0424: 2, H0213: 2, H0031: 2, L0769: 2, L0803: 2, L0792: 2, H0539: 2, L0748: 2, L0745: 2, L0747: 2, L0757: 2, H0717: 1, H0549: 1, S0222: 1, H0333: 1, H0318: 1, S0049: 1, L0738: 1, H0046: 1, H0024: 1, H0090: 1, H0649: 1, S0142: 1, L0763: 1, L0642: 1, L0764: 1, L0771: 1, L0649: 1, L0651: 1, L0632: 1, L0805: 1, L0790: 1, H0144: 1, H0723: 1, H0682: 1, H0696: 1, H0555: 1, S0028: 1, L0742: 1, L0744: 1 and L0752: 1.		
HOVEN79	HOVEN79R	1708	146 - 265	3883				
HOVEN86	HOVEN86R	1709	1 - 168	3884				
HOVEP45	HOVEP45R	1710	1 - 102	3885				

HOVEW80	HOVEW80R	1711	2 - 244	3886				
HOVEY58	HOVEY58R	1712	175 - 405	3887	Lys-5 to Ser-18.	L0803: 7, L0748: 4, L0439: 4, L0804: 3, L0750: 3, L0756: 3, H0024: 2, L0438: 2, L0747: 2, L0779: 2, H0624: 1, H0171: 1, H0661: 1, S0354: 1, H0208: 1, S0300: 1, H0441: 1, H0331: 1, H0013: 1, S0214: 1, H0428: 1, H0040: 1, L0770: 1, L0776: 1, L0809: 1, L0665: 1, H0547: 1, H0658: 1, S0432: 1, L0749: 1, L0777: 1, L0780: 1, L0755: 1 and L0759: 1.		
HOVFD79	HOVFD79R	1713	3 - 152	3888	Val-2 to Ser-7.			
HOVJF86	HOVJF86RA	1714	20 - 130	3889				
HOVJH27	HOVJH27RA	1715	2 - 355	3890				
HOVJI53	HOVJI53R	1716	1 - 396	3891				
HOVJJ09	HOVJJ09R	1717	1 - 576	3892	Ser-5 to Gly-10, Glu-18 to Glu-32, Ala-39 to Lys-46, Ser-89 to Arg-96, Pro-141 to Ala-151, Ser-162 to Gln-169.			
HOVJR56	HOVJR56R	1718	1 - 186	3893	Ala-18 to Ser-24, Gly-55 to Thr-60.			

HOVJU75	HOVJU75R	1719	49 - 684	3894	Tyr-44 to Asp-49, Pro-132 to Leu-139, Cys-168 to His-174.			
HOVJW17	HOVJW17R	1720	74 - 301	3895	Ala-8 to Gln-14, Arg-40 to Glu-45.			
HOVJY68	HOVJY68R	1721	199 - 570	3896	Pro-47 to Lys-53, Leu-93 to Lys-102, Tyr-105 to Gln-110, Arg-115 to Lys-124.			
HOVKB02	HOVKB02R	1722	1 - 366	3897	Ala-1 to His-13, Leu-73 to Leu-79.	L0157: 2, H0620: 2, L0666: 2, S0001: 1, L0717: 1, H0549: 1, S0222: 1, H0581: 1, H0194: 1, H0015: 1, H0399: 1, H0271: 1, H0688: 1, H0428: 1, H0124: 1, L0637: 1, H0672: 1, L0439: 1, L0750: 1 and H0423: 1.		
HOVKE66	HOVKE66R	1723	2 - 487	3898	Ala-20 to Val-38, Cys-43 to Thr-60, Arg-91 to Lys-97.			
HOVKF20	HOVKF20R	1724	1 - 168	3899	Gln-15 to Leu-20, Pro-37 to Thr-44.			
HOVKG18	HOVKG18R	1725	2 - 406	3900	Cys-23 to His-29, Ser-74 to Glu-91.			
HPAMB11	HPAMB11R	1726	323 - 511	3901	Gln-8 to Tyr-14, Pro-20 to Thr-26.			
HPAMB60	HPAMB60R	1727	2 - 586	3902				

HPAMB62	HPAMB62R	1728	2 - 196	3903	Leu-12 to Ser-21.	L0439: 11, L0747: 8, H0624: 6, L0759: 6, L0779: 5, L0758: 5, H0013: 4, L0803: 4, L0754: 4, H0171: 3, L0666: 3, L0756: 3, L0752: 3, L0755: 3, L0591: 3, L0608: 3, H0170: 2, H0650: 2, H0341: 2, H0663: 2, S0360: 2, S0003: 2, L0769: 2, L0796: 2, L0766: 2, L0649: 2, L0806: 2, H0696: 2, S0028: 2, L0740: 2, L0750: 2, L0777: 2, S0436: 2, L0361: 2, S0298: 1, S0418: 1, S0444: 1, S0408: 1, H0733: 1, H0734: 1, S0300: 1, S0220: 1, H0497: 1, H0333: 1, H0270: 1, H0575: 1, H0036: 1, H0590: 1, H0596: 1, H0050: 1, L0471: 1, H0015: 1, S0388: 1, S6028: 1, H0266: 1, H0328: 1, H0622: 1, H0708: 1, H0591: 1, H0040: 1,		

HPAMB93	HPAMB93R	1729	2 - 439	3904		H0087: 1, H0412: 1, H0059: 1, S0112: 1, H0625: 1, S0440: 1, S0150: 1, S0422: 1, L0598: 1, H0529: 1, L0770: 1, L0761: 1, L0646: 1, L0764: 1, L0662: 1, L0768: 1, L0794: 1, L0650: 1, L0774: 1, L0775: 1, L0375: 1, L0659: 1, L0809: 1, L0530: 1, L0664: 1, L0665: 1, S0053: 1, L0438: 1, H0547: 1, H0519: 1, H0682: 1, H0659: 1, H0658: 1, H0660: 1, H0539: 1, S0152: 1, S0044: 1, L0749: 1, L0757: 1, H0445: 1, S0394: 1, L0596: 1, L0594: 1, S0026: 1, S0276: 1, H0543: 1, H0423: 1, S0412: 1 and H0293: 1.		
HPAMC04	HPAMC04R	1730	134 - 334	3905				
HPAMC19	HPAMC19R	1731	8 - 631	3906				
HPAMC27	HPAMC27R	1732	1 - 669	3907				
HPAMC90	HPAMC90R	1733	18 - 464	3908	Arg-1 to Gly-6,	S0360: 15, S0358: 14,		

	Pro-13 to Thr-20.				L0794: 12, L0747: 12, H0696: 11, H0341: 10, H0670: 10, H0657: 9, S0422: 9, H0659: 8, S0114: 7, H0656: 7, S0408: 7, S0007: 7, H0486: 7, H0543: 7, S0444: 6, L0471: 6, S0126: 6, H0658: 6, S0378: 6, S0406: 6, S0027: 6, H0038: 5, H0040: 5, L0770: 5, L0517: 5, H0648: 5, S0404: 5, L0752: 5, H0423: 5, H0624: 4, H0171: 4, H0716: 4, S0116: 4, S0410: 4, H0545: 4, H0373: 4, H0674: 4, L0520: 4, L0763: 4, L0662: 4, L0775: 4, L0493: 4, L0518: 4, L0809: 4, L0519: 4, S3012: 4, H0445: 4, L0361: 4, H0685: 3, T0049: 3, S0420: 3, H0580: 3, S0132: 3, T0109: 3, H0013: 3, S0346: 3, H0597: 3, H0615: 3, H0616: 3, H0087: 3,

		H0494: 3, S0440: 3, L0769: 3, L0761: 3, L0764: 3, L0521: 3, L0803: 3, L0776: 3, L0537: 3, H0144: 3, H0682: 3, S0380: 3, S0028: 3, L0748: 3, L0731: 3, H0422: 3, H0394: 2, T0002: 2, H0159: 2, S0342: 2, H0717: 2, S0134: 2, H0484: 2, H0661: 2, H0638: 2, S0442: 2, H0637: 2, H0619: 2, H0351: 2, H0362: 2, S0280: 2, T0048: 2, H0009: 2, H0012: 2, H0014: 2, H0688: 2, H0617: 2, H0413: 2, L0065: 2, S0438: 2, S0210: 2, L0767: 2, L0522: 2, L0806: 2, L0653: 2, L0526: 2, L0546: 2, L0530: 2, L0532: 2, L0666: 2, L0665: 2, H0547: 2, H0689: 2, H0672: 2, H0651: 2, S0328: 2, S0330: 2, H0710: 2, S0152: 2, H0521: 2,				

		S0390: 2, S0032: 2, L0742: 2, L0750: 2, L0588: 2, L0603: 2, S0026: 2, H0170: 1, H0395: 1, H0713: 1, S0402: 1, S6024: 1, H0295: 1, H0294: 1, S0218: 1, S0110: 1, H0402: 1, H0305: 1, S0418: 1, H0722: 1, H0728: 1, S0046: 1, S0476: 1, S0300: 1, H0462: 1, S0222: 1, H0385: 1, H0370: 1, H0404: 1, H0592: 1, H0497: 1, H0333: 1, L0623: 1, L0586: 1, T0060: 1, H0098: 1, H0318: 1, L0563: 1, H0581: 1, H0421: 1, H0251: 1, H0309: 1, H0596: 1, H0231: 1, H0150: 1, H0123: 1, H0620: 1, L0163: 1, S0051: 1, H0399: 1, H0354: 1, H0266: 1, S0334: 1, S0312: 1, S0214: 1, H0428: 1, L0483: 1, T0006: 1, H0553: 1, H0606: 1,				

		H0212: 1, H0124: 1, H0090: 1, H0059: 1, T0004: 1, T0041: 1, H0560: 1, H0625: 1, H0561: 1, H0366: 1, H0509: 1, H0633: 1, S0472: 1, H0647: 1, H0646: 1, H0649: 1, S0142: 1, H0529: 1, L0451: 1, L0625: 1, L0640: 1, L0501: 1, L3904: 1, L0771: 1, L0560: 1, L5569: 1, L5574: 1, L5564: 1, L0499: 1, L0651: 1, L0555: 1, L0514: 1, L0783: 1, L0529: 1, L0791: 1, L0664: 1, S0374: 1, H0691: 1, H0684: 1, H0435: 1, H0660: 1, H0666: 1, H0539: 1, H0524: 1, H0704: 1, S0044: 1, S0146: 1, H0134: 1, H0436: 1, S0392: 1, S3014: 1, L0753: 1, L0755: 1, L0759: 1, S0031: 1, S0260: 1, H0444: 1, H0595: 1, L0599: 1, L0608: 1,				

						H0653: 1, S0242: 1, S0194: 1, S0196: 1, H0542: 1, H0506: 1 and H0352: 1.		
HPAMD56	HPAMD56R	1734	1 - 504	3909	Glu-10 to Phe-17, Phe-25 to Leu-32, Thr-38 to Tyr-44, Gln-81 to Thr-88.			
HPAME35	HPAME35R	1735	2 - 277	3910	Gly-60 to Phe-66.	L0731: 9, L0653: 8, L0757: 6, L0809: 5, L0747: 5, S0418: 4, S0360: 4, H0188: 4, S0404: 4, L0779: 4, S0040: 3, H0370: 3, H0040: 3, L0774: 3, S0434: 3, S0442: 2, H0575: 2, H0252: 2, S0440: 2, L0374: 2, L0773: 2, H0435: 2, S0406: 2, L0748: 2, L0740: 2, L0754: 2, L0746: 2, L0758: 2, L0581: 2, H0624: 1, H0686: 1, S0180: 1, H0661: 1, S0358: 1, S0476: 1, L0717: 1, H0549: 1, H0455: 1, H0586: 1, H0632: 1, S0280: 1, H0599: 1, H0118: 1, H0235: 1,		

HPAME58	HPAME58R	1736	184 - 492	3911	Lys-1 to Leu-12.	H0597: 1, H0545: 1, T0003: 1, H0510: 1, S0314: 1, H0039: 1, L0194: 1, T0086: 1, H0606: 1, H0032: 1, H0674: 1, H0708: 1, H0598: 1, H0634: 1, H0379: 1, H0413: 1, H0100: 1, S0464: 1, H0509: 1, S0344: 1, L0763: 1, L4497: 1, L0639: 1, L0764: 1, L0771: 1, L0364: 1, L0775: 1, L0806: 1, L0655: 1, L0807: 1, L0657: 1, L0788: 1, L0664: 1, L0665: 1, S0374: 1, H0693: 1, S0126: 1, H0689: 1, H0690: 1, H0682: 1, H0670: 1, H0660: 1, H0672: 1, S0330: 1, S0152: 1, S0390: 1, L0744: 1, L0750: 1, L0780: 1, L0753: 1, H0665: 1, H0667: 1 and S0196: 1.	H0663: 1, L0438: 1 and H0682: 1.		
HPAMF16	HPAMF16R	1737	19 - 513	3912	Glu-1 to Gly-8.			

HPAMF38	HPAMF38R	1738	24 - 449	3913	Ser-35 to Gly-41, Ser-71 to Met-80.	L0752: 12, L0748: 8, L0766: 5, L0599: 5, H0617: 4, L0764: 4, H0081: 3, L0774: 3, L0806: 3, L0776: 3, L0749: 3, L0750: 3, S0444: 2, S0408: 2, H0392: 2, H0150: 2, H0494: 2, H0521: 2, L0756: 2, L0758: 2, H0506: 2, H0352: 2, H0265: 1, H0483: 1, S0358: 1, L0021: 1, H0108: 1, H0024: 1, H0083: 1, S0366: 1, H0090: 1, H0038: 1, H0040: 1, T0041: 1, L0763: 1, L0770: 1, L3905: 1, L0772: 1, L0644: 1, L0645: 1, L0771: 1, L0775: 1, L0651: 1, L0378: 1, L0659: 1, L0666: 1, L0665: 1, L0438: 1, H0519: 1, H0682: 1, H0670: 1, S0188: 1, L0740: 1, L0747: 1, L0777: 1, L0759: 1, H0445: 1, L0596: 1, L0604: 1 and H0542: 1.		

HPAMG44	HPAMG44R	1739	385 - 666	3914					
HPAMG54	HPAMG54R	1740	3 - 410	3915					
HPAMI11	HPAMI11R	1741	2 - 670	3916	Lys-13 to Tyr-30, Arg-52 to Lys-57, Ser-72 to Thr-79, Thr-110 to Trp-115, Leu-124 to Ala-130, Leu-132 to Glu-138, Asn-141 to Lys-162.				
HPAMJ71	HPAMJ71R	1742	2 - 472	3917					
HPAMQ47	HPAMQ47R	1743	100 - 246	3918		L0777: 5, L0766: 3, L0803: 3, L0439: 3, S0360: 2, L0598: 2, L0666: 2, L0748: 2, T0049: 1, S0134: 1, S0116: 1, L0717: 1, H0586: 1, H0486: 1, H0575: 1, H0510: 1, H0553: 1, H0560: 1, S0422: 1, L0763: 1, L0769: 1, L0521: 1, L0767: 1, L0768: 1, L0775: 1, L0663: 1, S0374: 1, L0438: 1, H0520: 1, H0682: 1, S0328: 1, L0740: 1, L0757: 1, S0192: 1 and H0543: 1.				
HPAMQ76	HPAMQ76R	1744	2 - 190	3919	Pro-18 to Lys-24.				
HPAMT47	HPAMT47R	1745	327 - 509	3920	Thr-27 to Lys-37.	S0358: 8, L0777: 6,			

		L0744: 4, H0656: 3, L0766: 3, H0659: 3, H0436: 3, L0754: 3, L0747: 3, L0731: 3, S0026: 3, H0254: 2, S0007: 2, H0587: 2, L0586: 2, H0545: 2, H0150: 2, L0794: 2, H0144: 2, L0750: 2, L0608: 2, S0412: 2, H0170: 1, H0638: 1, S0420: 1, S0442: 1, S0444: 1, H0329: 1, S0045: 1, H0645: 1, H0586: 1, H0333: 1, H0574: 1, H0013: 1, H0250: 1, L0105: 1, H0581: 1, H0196: 1, H0263: 1, H0546: 1, H0457: 1, L0157: 1, L0471: 1, S0051: 1, S0336: 1, S0214: 1, H0428: 1, H0032: 1, H0166: 1, H0673: 1, H0561: 1, S0440: 1, L0763: 1, L0764: 1, L0803: 1, L0804: 1, L0776: 1, T0068: 1, H0547: 1, H0519: 1, H0593: 1, H0690: 1,			

						H0682: 1, H0435: 1, H0670: 1, H0666: 1, H0672: 1, S0328: 1, H0696: 1, L0751: 1, L0749: 1, L0756: 1, L0780: 1, L0757: 1, L0759: 1, H0543: 1, H0423: 1 and H0422: 1.		
HPAMU33	HPAMU33R	1746	2 - 520	3921	Lys-59 to Tyr-70, Pro-109 to Lys-115.			
HPAMV82	HPAMV82R	1747	207 - 422	3922	Gln-34 to Asn-39.			
HPAMW44	HPAMW44R	1748	1 - 357	3923	Gly-1 to Arg-13, Glu-37 to Lys-42, Gly-45 to Gln-64.	L0742: 11, L0747: 10, L0769: 9, L0766: 9, L0754: 8, L0751: 7, L0777: 7, L0752: 7, L0806: 6, L0776: 6, L0743: 6, L0717: 4, L0665: 4, L0750: 4, S0360: 3, H0580: 3, H0318: 3, H0052: 3, L0471: 3, H0040: 3, T0042: 3, H0547: 3, H0682: 3, L0745: 3, L0779: 3, L0759: 3, L0593: 3, L0601: 3, H0624: 2, H0556: 2, S0045: 2, H0559: 2, H0013: 2, H0530: 2, H0046: 2, H0620: 2, S0051: 2, T0010: 2,		

		H0083: 2, S0002: 2, L0770: 2, L0659: 2, H0520: 2, S0292: 2, L0744: 2, L0740: 2, L0758: 2, L0596: 2, T0049: 1, L0393: 1, S0001: 1, H0663: 1, H0306: 1, H0638: 1, S0420: 1, S0358: 1, S0132: 1, H0619: 1, H0645: 1, H0550: 1, S0222: 1, H0392: 1, H0438: 1, H0257: 1, T0039: 1, T0040: 1, S0280: 1, H0156: 1, H0575: 1, H0618: 1, H0253: 1, S0010: 1, H0581: 1, H0194: 1, H0204: 1, H0150: 1, H0123: 1, H0292: 1, L0194: 1, T0023: 1, H0031: 1, H0553: 1, H0617: 1, H0673: 1, H0169: 1, H0674: 1, H0090: 1, H0269: 1, H0623: 1, H0494: 1, L0475: 1, S0150: 1, H0538: 1, L0763: 1, L0638: 1, L0761: 1, L0646: 1, L0645: 1,				

					L0771: 1, L0803: 1, L0774: 1, L0775: 1, L0651: 1, L0657: 1, L0658: 1, L0545: 1, L0792: 1, L0663: 1, L0664: 1, H0144: 1, H0593: 1, S0126: 1, H0435: 1, S0330: 1, H0521: 1, H0522: 1, S0044: 1, S0406: 1, S0027: 1, L0741: 1, L0439: 1, L0755: 1, L0757: 1, S0436: 1, L0485: 1, L0603: 1, S0011: 1, H0668: 1, H0542: 1 and H0422: 1.		
HPAMY45	HPAMY45R	1749	291 - 569	3924	Pro-1 to Cys-6, Ala-13 to Ala-19, His-22 to Lys-28, Ser-44 to Cys-53, Pro-56 to Gly-67.			
HPAMZ14	HPAMZ14R	1750	2 - 628	3925	Trp-19 to Ser-27, Pro-185 to Ser-195.			
HPAMZ15	HPAMZ15R	1751	3 - 149	3926		L0493: 91, L0515: 29, L0509: 25, L0514: 21, L0803: 12, L0508: 8, L0604: 7, H0599: 6, L0809: 5, H0445: 5, L0800: 4, L0511: 4, L0362: 4, H0543: 4,		

		H0657: 3, L0598: 3, L0498: 3, L0805: 3, L0780: 3, L0755: 3, L0731: 3, L0759: 3, L0591: 3, S0026: 3, H0170: 2, H0373: 2, H0038: 2, H0623: 2, H0494: 2, H0560: 2, H0561: 2, L0503: 2, L0651: 2, L0653: 2, L0776: 2, L0792: 2, H0520: 2, H0555: 2, S0206: 2, L0748: 2, L0749: 2, L0756: 2, L0779: 2, L0590: 2, L0608: 2, H0668: 2, H0422: 2, S0040: 1, S0114: 1, S0134: 1, S0218: 1, H0656: 1, S0212: 1, S0360: 1, H0489: 1, H0580: 1, S0045: 1, S0476: 1, H0431: 1, H0643: 1, L0623: 1, H0486: 1, H0069: 1, H0002: 1, H0097: 1, H0274: 1, S0474: 1, H0421: 1, L0040: 1, H0024: 1, S0003: 1, H0622: 1, H0553: 1, H0032: 1,				

					H0388: 1, H0400: 1, S0036: 1, H0090: 1, H0551: 1, H0264: 1, H0412: 1, S0386: 1, T0042: 1, H0625: 1, S0210: 1, H0529: 1, L0625: 1, L0505: 1, L0506: 1, L0500: 1, L0761: 1, L0646: 1, L0662: 1, L0794: 1, L0375: 1, L0784: 1, L0655: 1, L0510: 1, L0634: 1, L0517: 1, L0519: 1, L0793: 1, L0666: 1, L0664: 1, S0374: 1, H0547: 1, H0519: 1, H0682: 1, H0658: 1, H0648: 1, H0672: 1, H0539: 1, H0521: 1, H0696: 1, S0146: 1, S0390: 1, L0747: 1, L0753: 1, S0260: 1, H0444: 1, S0434: 1, L0584: 1, S0242: 1, S0194: 1, S0276: 1, H0542: 1 and S0424: 1.		
HPAMZ81	HPAMZ81R	1752	3 - 677	3927	Ser-1 to Lys-25, Glu-71 to Ser-77, Glu-93 to Thr-99,		

					Arg-123 to His-134, Pro-141 to His-146, His-198 to Ala-207.			
HPANA05	HPANA05R	1753	2 - 514	3928	Thr-23 to Gln-35, His-37 to Val-51, Arg-70 to Arg-81, Gln-108 to Asp-114, Met-130 to Ser-140.			
HPANA07	HPANA07R	1754	1 - 720	3929	Ala-1 to Thr-6, Lys-19 to Leu-24, Ile-77 to Ala-93, Val-105 to Leu-110, Thr-139 to Thr-153, Thr-165 to Lys-187, Ala-198 to Leu-203, Ser-211 to Lys-226.	H0497: 5, S0002: 5, H0529: 5, H0556: 4, H0046: 3, L0455: 3, T0042: 3, H0520: 3, H0543: 3, H0265: 2, H0657: 2, H0656: 2, H0458: 2, S0358: 2, H0486: 2, H0050: 2, H0124: 2, H0591: 2, H0494: 2, L0662: 2, H0522: 2, L0740: 2, L0751: 2, L0747: 2, L0588: 2, L0605: 2, H0667: 2, H0686: 1, H0650: 1, H0664: 1, H0125: 1, S0418: 1, H0580: 1, S6014: 1, H0257: 1, H0559: 1, H0635: 1, H0427: 1, H0575: 1, H0052: 1, N0006: 1, L0471: 1, H0373: 1, H0083: 1,		

HPANA28	HPANA28R	1755	2 - 376	3930	Gln-22 to Thr-31, Leu-91 to Leu-104.	H0266: 1, S0250: 1, S0022: 1, H0428: 1, H0031: 1, H0383: 1, H0212: 1, S0366: 1, S0036: 1, H0040: 1, H0634: 1, H0561: 1, S0210: 1, L0770: 1, L0761: 1, L0772: 1, L0641: 1, L0644: 1, L0764: 1, L0776: 1, L0655: 1, L0807: 1, L0657: 1, L0665: 1, S0148: 1, S0126: 1, H0682: 1, H0694: 1, S0037: 1, L0744: 1, L0750: 1, L0755: 1, L0731: 1, S0436: 1, L0596: 1, L0485: 1, L0601: 1, S0276: 1, H0423: 1, S0424: 1 and S0446: 1.		
HPANA87	HPANA87R	1756	494 - 730	3931	Gln-13 to Gly-28.			
HPANB32	HPANB32R	1757	2 - 247	3932				
HPANC01	HPANC01R	1758	255 - 446	3933	Leu-1 to Ser-8.			
HPANE49	HPANE49R	1759	2 - 412	3934				
HPANE52	HPANE52R	1760	1 - 666	3935	Lys-64 to Tyr-75, Pro-114 to Lys-120, Leu-160 to Lys-169,			

HPANE87	HPANE87R	1761	119 - 652	3936	Tyr-172 to Gln-177, Pro-182 to Val-189.	L0752: 10, L0593: 9, L0775: 8, L0588: 8, L0666: 7, L0665: 7, L0592: 7, L0595: 7, L0363: 6, L0774: 6, L0747: 6, L0362: 6, H0422: 6, L0455: 5, L0659: 5, H0539: 5, H0170: 4, S0360: 4, L0657: 4, H0547: 4, L0749: 4, L0779: 4, L0757: 4, H0657: 3, H0412: 3, L0520: 3, L0761: 3, L0646: 3, L0375: 3, L0651: 3, L0783: 3, H0144: 3, H0520: 3, H0659: 3, H0670: 3, H0648: 3, L0740: 3, L0750: 3, L0756: 3, L0731: 3, L0759: 3, L0591: 3, L0608: 3, H0662: 2, S0376: 2, H0637: 2, H0619: 2, L0717: 2, S0280: 2, H0318: 2, T0010: 2, H0040: 2, H0413: 2, L0351: 2, H0646: 2, L0763: 2,		

		L0521: 2, L0784: 2, L0655: 2, L0382: 2, L0809: 2, L0664: 2, H0682: 2, H0658: 2, H0672: 2, L0439: 2, L0755: 2, L0589: 2, L0604: 2, S0424: 2, H0624: 1, H0686: 1, H0685: 1, S0040: 1, H0716: 1, H0341: 1, H0580: 1, S0468: 1, S6026: 1, H0351: 1, H0392: 1, L0623: 1, T0060: 1, H0069: 1, H0427: 1, T0048: 1, T0071: 1, S0049: 1, H0052: 1, L0471: 1, S0388: 1, S0051: 1, S0003: 1, T0006: 1, L0055: 1, H0169: 1, S0036: 1, T0067: 1, H0059: 1, H0494: 1, H0560: 1, S0372: 1, S0002: 1, L0371: 1, L0637: 1, L0627: 1, L0772: 1, L0764: 1, L0662: 1, L0767: 1, L0768: 1, L0649: 1, L4500: 1, L0650: 1, L0378: 1, L0806: 1,				

HPANJ67	HPANJ67R	1762	3 - 119	3937	Ser-5 to Ser-14, Gln-21 to Gln-28.	L0633: 1, L0628: 1, L0517: 1, L0518: 1, L0789: 1, L0663: 1, L0352: 1, H0684: 1, H0435: 1, H0666: 1, S0330: 1, S0378: 1, S0380: 1, S0152: 1, H0134: 1, S0406: 1, H0436: 1, L0612: 1, L0742: 1, L0748: 1, L0751: 1, S0031: 1, L0596: 1, L0485: 1, L0599: 1, L0601: 1, S0026: 1, H0542: 1, H0543: 1 and H0423: 1.			
HPANK61	HPANK61R	1763	170 - 310	3938		H0328: 2, H0674: 2, L0774: 2, L0805: 2, H0682: 2, L0731: 2, H0306: 1, L0770: 1, L0764: 1, L0809: 1, H0520: 1, H0660: 1, H0521: 1, L0744: 1, L0751: 1, L0750: 1, L0752: 1, S0026: 1, H0352: 1 and L0360: 1.			
HPCOB29	HPCOB29R	1764	2 - 139	3939					
HPCOB69	HPCOB69R	1765	47 - 118	3940					
HPCOJ59	HPCOJ59R	1766	3 - 308	3941	Pro-1 to Val-6,	H0659: 2			

						Asp-51 to Phe-56, Asp-83 to Gly-88, Ser-94 to Glu-102.			
HPCOK72	HPCOK72R	1767	197 - 346	3942					
HPCOK73	HPCOK73R	1768	426 - 557	3943		Ile-12 to Cys-18.	H0591: 62, S0242: 15, L0754: 11, S0003: 9, S0196: 8, L0766: 7, H0144: 6, L0740: 6, L0664: 5, S0420: 4, H0393: 4, L0803: 4, H0428: 3, H0509: 3, H0641: 3, L0777: 3, L0595: 3, L0362: 3, S0360: 2, H0013: 2, L0471: 2, L0163: 2, H0355: 2, H0553: 2, S0036: 2, L0662: 2, L0804: 2, S0374: 2, L0438: 2, S0126: 2, L0748: 2, L0755: 2, L0485: 2, S0412: 2, H0341: 1, S0376: 1, H0580: 1, S0045: 1, H0331: 1, T0039: 1, T0060: 1, H0427: 1, L0021: 1, H0590: 1, H0318: 1, H0194: 1, H0563: 1, H0572: 1, H0051: 1, H0083: 1, S6028: 1, S0312: 1,		

						S0214: 1, H0031: 1, H0628: 1, H0598: 1, H0038: 1, H0634: 1, H0616: 1, H0551: 1, H0412: 1, L0370: 1, H0494: 1, H0625: 1, S0440: 1, S0344: 1, H0529: 1, L0770: 1, L0646: 1, L0645: 1, L0648: 1, L0521: 1, L0775: 1, L0525: 1, L0805: 1, L0657: 1, L0782: 1, L0663: 1, L0665: 1, H0547: 1, H0519: 1, H0711: 1, H0659: 1, H0660: 1, H0518: 1, S0152: 1, H0521: 1, L0745: 1, L0759: 1, S0434: 1, L0590: 1, L0592: 1, L0594: 1, H0667: 1, H0423: 1, H0422: 1, S0424: 1 and H0506: 1.		
HPCOK93	HPCOK93R	1769	1 - 108	3944				
HPCOL81	HPCOL81R	1770	33 - 179	3945	Lys-42 to Val-49.			
HPCOO90	HPCOO90R	1771	3 - 335	3946	Ala-3 to Gly-9.			
HPCOO95	HPCOO95R	1772	343 - 2	3947	Tyr-12 to Ile-17, Pro-28 to Asn-33, Arg-45 to Asp-53.			
HPCOP23	HPCOP23R	1773	2 - 427	3948				

HPCOQ33	HPCOQ33R	1774	417 - 548	3949			
HPCOQ85	HPCOQ85R	1775	2 - 259	3950		L0803: 8, L0777: 8, L0794: 7, L0766: 7, H0144: 5, L0438: 5, H0547: 5, L0439: 5, H0013: 4, L0779: 4, H0441: 3, S0440: 3, L0762: 3, L0771: 3, L0662: 3, L0666: 3, L0665: 3, L0748: 3, L0752: 3, H0656: 2, H0341: 2, S0418: 2, S0356: 2, H0575: 2, H0328: 2, H0615: 2, H0040: 2, H0477: 2, T0041: 2, L0598: 2, L0763: 2, L0659: 2, L0663: 2, L0664: 2, H0659: 2, L0602: 2, S0406: 2, L0755: 2, L0759: 2, L0592: 2, H0624: 1, H0170: 1, H0171: 1, S0134: 1, H0583: 1, H0650: 1, H0657: 1, L0415: 1, S0116: 1, H0661: 1, H0664: 1, S0420: 1, L0005: 1, S0444: 1, S0360: 1, S0408: 1, S0046: 1, S0476: 1,		

HPCOQ92	HPCOQ92R	1776	483 - 641	3951		S0300: 1, L0717: 1, H0411: 1, H0486: 1, T0039: 1, H0318: 1, H0581: 1, H0123: 1, H0014: 1, H0354: 1, H0179: 1, S0003: 1, H0628: 1, H0032: 1, S0036: 1, L0060: 1, H0264: 1, H0412: 1, L0564: 1, H0625: 1, H0131: 1, H0646: 1, S0002: 1, L0770: 1, L0637: 1, L0761: 1, L0800: 1, L0764: 1, L0649: 1, L0804: 1, L0650: 1, L0519: 1, L0352: 1, H0519: 1, S0126: 1, H0658: 1, H0648: 1, H0672: 1, S0328: 1, S0330: 1, H0518: 1, H0696: 1, H0704: 1, S0027: 1, L0743: 1, L0754: 1, L0747: 1, L0758: 1, S0434: 1, L0591: 1, S0011: 1, H0543: 1, H0422: 1, H0506: 1 and H0721: 1.		
HPCOR41	HPCOR41R	1777	133 - 396	3952	Ala-44 to Gly-50.			

HPCOR52	HPCOR52R	1778	43 - 432	3953				
HPCOU70	HPCOU70R	1779	137 - 355	3954			S0414: 16, S0360: 6, S0358: 5, L0766: 5, H0574: 4, H0521: 4, L0754: 4, L0756: 4, S0422: 3, L0770: 3, H0547: 3, H0672: 3, L0596: 3, H0251: 2, H0615: 2, H0090: 2, L0646: 2, L0662: 2, L0776: 2, L0659: 2, L0752: 2, L0758: 2, S0436: 2, L0595: 2, H0624: 1, L0002: 1, H0583: 1, H0650: 1, S0116: 1, S0298: 1, S0282: 1, S0418: 1, H0722: 1, H0734: 1, S0045: 1, S0300: 1, L0717: 1, S0222: 1, H0013: 1, L0021: 1, H0706: 1, L0105: 1, H0263: 1, L0041: 1, H0057: 1, S0050: 1, L0163: 1, H0051: 1, S0388: 1, S0051: 1, H0271: 1, S0003: 1, H0644: 1, H0032: 1, H0673: 1, H0379: 1, H0272: 1, H0059: 1,		

HPCOV35	HPCOV35R	1780	151 - 657	3955	Lys-4 to Lys-16.	H0130: 1, H0647: 1, S0210: 1, S0426: 1, H0529: 1, L0637: 1, L0372: 1, L0649: 1, L0775: 1, L0651: 1, L0806: 1, L0657: 1, L0518: 1, L0788: 1, L0666: 1, L0663: 1, L0665: 1, H0144: 1, L0438: 1, H0519: 1, H0689: 1, H0690: 1, H0659: 1, S0380: 1, H0696: 1, S0406: 1, H0436: 1, H0478: 1, H0727: 1, L0439: 1, L0731: 1, H0595: 1, S0434: 1, L0608: 1, H0667: 1, S0196: 1, H0422: 1, S0424: 1 and H0506: 1.		
HPCOV41	HPCOV41R	1781	3 - 356	3956				
HPCOX43	HPCOX43R	1782	158 - 418	3957	Asn-9 to Trp-14, Pro-20 to Arg-46.			
HPCPB38	HPCPB38R	1783	294 - 473	3958		L0439: 3, L0438: 1, H0659: 1, H0648: 1 and S0330: 1.		
HPCPD26	HPCPD26R	1784	3 - 314	3959				
HPCPE33	HPCPE33R	1785	308 - 427	3960		H0551: 11, L0766: 10, L0794: 8, S0026: 7,		

		H0556: 6, L0770: 6, H0659: 6, H0521: 6, L0740: 5, H0661: 4, H0638: 4, H0497: 4, H0560: 4, H0170: 3, H0341: 3, S0360: 3, H0318: 3, H0561: 3, L0731: 3, L0757: 3, H0265: 2, S0418: 2, S0420: 2, S0356: 2, S0132: 2, S0278: 2, T0115: 2, T0110: 2, H0083: 2, S0214: 2, H0622: 2, H0617: 2, S0364: 2, H0090: 2, T0042: 2, H0366: 2, H0646: 2, S0002: 2, H0529: 2, L0369: 2, L0769: 2, L0646: 2, L0776: 2, L0655: 2, L0809: 2, L0789: 2, L0666: 2, L0664: 2, L0777: 2, L0758: 2, L0593: 2, H0668: 2, H0543: 2, H0423: 2, T0002: 1, S0342: 1, H0716: 1, H0657: 1, S0212: 1, H0402: 1, L0005: 1, S0376: 1, H0580: 1, H0339: 1,				

		L0717: 1, H0370: 1, S0005: 1, H0257: 1, H0485: 1, T0109: 1, H0635: 1, H0309: 1, H0046: 1, L0471: 1, H0014: 1, H0266: 1, S0003: 1, S0022: 1, H0615: 1, H0031: 1, S0366: 1, H0038: 1, H0616: 1, H0413: 1, T0041: 1, H0625: 1, L0065: 1, S0440: 1, S0150: 1, H0641: 1, S0344: 1, S0422: 1, H0026: 1, H0517: 1, L0763: 1, L0761: 1, L0630: 1, L0800: 1, L0641: 1, L0642: 1, L0771: 1, L0768: 1, L0803: 1, L0650: 1, L0775: 1, L0805: 1, L0653: 1, L0657: 1, L0663: 1, H0693: 1, H0519: 1, S0126: 1, H0658: 1, S0330: 1, S0152: 1, H0522: 1, H0696: 1, S0406: 1, H0436: 1, H0626: 1, S3014: 1, S0027: 1, S0206: 1, L0596: 1,					

						S0194: 1, H0542: 1, H0422: 1 and H0506: 1.		
HPCPH50	HPCPH50R	1786	93 - 209	3961		H0659: 2, L0752: 2, L0595: 2 and H0686: 1.		
HPCPH51	HPCPH51R	1787	203 - 412	3962	Pro-10 to Val-15, Ser-25 to Asn-32.			
HPCPH52	HPCPH52R	1788	3 - 101	3963				
HPCPH68	HPCPH68R	1789	191 - 322	3964				
HPCPU27	HPCPU27R	1790	3 - 116	3965	Pro-29 to Gln-38.			
HPCPW09	HPCPW09R	1791	201 - 407	3966	Gln-47 to Lys-55.	L0766: 10, L0754: 9, S0358: 6, H0616: 6, H0551: 5, L0439: 5, H0657: 4, H0497: 4, S0003: 4, H0038: 4, S0422: 4, S0374: 4, H0659: 4, S0045: 3, H0644: 3, H0412: 3, H0529: 3, L0662: 3, L0805: 3, L0657: 3, L0663: 3, H0521: 3, H0624: 2, H0171: 2, S0040: 2, H0638: 2, S0418: 2, L0005: 2, S0376: 2, H0546: 2, H0046: 2, H0553: 2, H0169: 2, H0591: 2, H0413: 2, H0623: 2, L0646: 2, L0771: 2, L0803: 2, L0526: 2, L0666: 2, L0664: 2,		

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HPCPX80	HPCPX80R	1792	209 - 298	3967	His-25 to Lys-30.	H0659: 2, L0438: 1 and L0439: 1.		
HPCQO79	HPCQO79R	1793	74 - 256	3968	Thr-19 to Leu-24.			
HPCQO91	HPCQO91R	1794	270 - 479	3969		H0521: 13, L0659: 10, L0779: 10, H0551: 9, S0360: 6, S0214: 6, L0770: 6, L0649: 6, L0666: 6, L0731: 6, H0170: 5, H0638: 5, S0376: 5, H0580: 5, H0575: 5, H0553: 5, S0210: 5, L0662: 5, L0776: 5, L0657: 5, H0547: 5, L0439: 5, H0656: 4, S0358: 4, H0676: 4, H0574: 4, H0486: 4, H0318: 4, S0003: 4, L0655: 4,		

		L0663: 4, L0665: 4, H0659: 4, L0756: 4, L0757: 4, H0445: 4, H0542: 4, S0212: 3, H0009: 3, L0157: 3, L0471: 3, H0024: 3, H0494: 3, L0763: 3, L0637: 3, L0646: 3, L0764: 3, S0052: 3, H0672: 3, L0748: 3, L0750: 3, L0752: 3, L0755: 3, L0608: 3, S0026: 3, H0543: 3, H0171: 2, H0556: 2, H0657: 2, L0785: 2, S0420: 2, L0005: 2, H0156: 2, S0474: 2, H0581: 2, H0251: 2, H0545: 2, H0373: 2, H0477: 2, H0412: 2, H0413: 2, T0041: 2, S0466: 2, H0641: 2, S0144: 2, L0372: 2, L0774: 2, L0805: 2, L0783: 2, L0664: 2, S0374: 2, L0438: 2, H0658: 2, H0670: 2, H0660: 2, H0539: 2, H0522: 2, H0436: 2, L0742: 2, L0777: 2,				

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HPCQQ66	HPCQQ66R	1795	113 - 271	3970		H0646: 1, S0142: 1, S0344: 1, S0002: 1, S0426: 1, H0695: 1, L0369: 1, L0772: 1, L0765: 1, L0771: 1, L0648: 1, L0560: 1, L0386: 1, L0381: 1, L0804: 1, L0775: 1, L0806: 1, L0658: 1, S0428: 1, H0144: 1, H0520: 1, S0126: 1, H0690: 1, H0682: 1, H0435: 1, H0666: 1, S0330: 1, S0380: 1, H0518: 1, S0152: 1, S0350: 1, H0696: 1, S0044: 1, S0037: 1, S0028: 1, L0747: 1, S0031: 1, H0444: 1, L0588: 1, L0594: 1, L0601: 1, S0011: 1, H0667: 1, H0423: 1, H0422: 1 and H0008: 1.			
HPCQT27	HPCQT27R	1796	119 - 265	3971					
HPCQT88	HPCQT88R	1797	1 - 345	3972					
HPCQW64	HPCQW64R	1798	2 - 229	3973	Pro-3 to Cys-9, Asn-28 to Phe-37.				
HPCQW77	HPCQW77R	1799	259 - 408	3974		L0758: 6, L0779: 5, L0766: 4, L0731: 4,			

						S0360: 2, L0769: 2, L0649: 2, H0648: 2, L0744: 2, L0740: 2, L0747: 2, L0777: 2, L0755: 2, L0757: 2, L0599: 2, H0171: 1, T0049: 1, H0657: 1, H0255: 1, H0638: 1, S0408: 1, H0619: 1, H0037: 1, H0052: 1, L0471: 1, H0014: 1, H0316: 1, S0438: 1, L0520: 1, L0763: 1, L0770: 1, L0637: 1, L0761: 1, L0373: 1, L0764: 1, L0774: 1, L0775: 1, L0375: 1, L0776: 1, L0655: 1, L0527: 1, L0542: 1, L0382: 1, L0519: 1, H0144: 1, H0682: 1, H0659: 1, H0660: 1, H0696: 1, H0555: 1, S3012: 1, L0439: 1, L0751: 1, L0754: 1, L0745: 1, L0749: 1, L0752: 1, L0759: 1, H0542: 1, S0458: 1 and S0384: 1.		
HPCQX47	HPCQX47R	1800	174 - 326	3975	Lys-1 to Val-6.			

HPCRN90	HPCRN90R	1801	2 - 109	3976					
HPCTD21	HPCTD21R	1802	228 - 560	3977	Ser-8 to Lys-21, Gln-47 to Glu-52, Arg-72 to Arg-87.				
HPCTD23	HPCTD23R	1803	350 - 760	3978	Met-4 to Lys-18, Gln-44 to Glu-49, Arg-69 to Arg-84.				
HPCTD25	HPCTD25R	1804	269 - 598	3979	Asn-1 to Lys-20, Gln-46 to Glu-51, Arg-71 to Arg-86.				
HPCTD61	HPCTD61R	1805	354 - 713	3980	Asn-1 to Lys-21, Gln-47 to Glu-52, Arg-72 to Arg-87.				
HPCTF29	HPCTF29R	1806	2 - 595	3981					
HPCTF83	HPCTF83R	1807	1 - 177	3982		L0655: 22, H0648: 8, H0638: 4, H0318: 4, L0776: 4, L0659: 4, L0751: 4, L0747: 4, L0599: 4, S0358: 3, L0761: 3, L0775: 3, L0760: 2, H0255: 2, H0663: 2, S0360: 2, H0486: 2, L0142: 2, H0087: 2, L0662: 2, L0378: 2, L0653: 2, L0783: 2, L0666: 2, L0664: 2, L0665: 2, L0743: 2, L0756: 2, L0777: 2, L0362: 2, L0600: 2, H0650: 1,			

		H0657: 1, H0692: 1, H0381: 1, H0306: 1, H0402: 1, H0305: 1, S0376: 1, S0300: 1, H0441: 1, L0622: 1, L0623: 1, L0586: 1, H0635: 1, L0022: 1, H0042: 1, H0575: 1, H0581: 1, H0052: 1, H0597: 1, H0231: 1, H0109: 1, H0029: 1, H0039: 1, T0006: 1, H0031: 1, H0166: 1, H0673: 1, H0674: 1, H0163: 1, H0063: 1, H0413: 1, H0359: 1, H0396: 1, H0647: 1, H0646: 1, S0002: 1, H0529: 1, L0762: 1, L0769: 1, L0667: 1, L0772: 1, L0372: 1, L0771: 1, L0767: 1, L0768: 1, L0387: 1, L0766: 1, L0774: 1, L0784: 1, L0606: 1, L0607: 1, L0629: 1, L0657: 1, L0518: 1, L0782: 1, L0809: 1, L0787: 1, L0789: 1, L0790: 1, L0663: 1,				

HPCTI39	HPCTI39R	1808	1 - 114	3983		H0690: 1, H0659: 1, H0672: 1, H0651: 1, S0328: 1, S0378: 1, H0521: 1, H0522: 1, S0044: 1, H0214: 1, H0187: 1, L0748: 1, L0740: 1, L0755: 1, H0445: 1, H0595: 1, S0106: 1, S0462: 1 and H0677: 1.		
HPCTI86	HPCTI86R	1809	1 - 306	3984	Lys-37 to Arg-42, Ser-74 to Thr-81.			
HPCTN62	HPCTN62R	1810	341 - 451	3985	Arg-6 to Asp-15.			
HPCTO69	HPCTO69R	1811	23 - 538	3986				
HPCTP60	HPCTP60R	1812	191 - 343	3987		H0052: 3, H0624: 2, H0014: 2, H0375: 2, L0598: 2, L0662: 2, L0803: 2, L0792: 2, L0666: 2, L0664: 2, H0659: 2, L0742: 2, L0743: 2, L0754: 2, H0423: 2, H0171: 1, H0686: 1, S0360: 1, H0486: 1, H0194: 1, L0041: 1, L0471: 1, H0687: 1, H0040: 1, H0264: 1, S0440: 1, S0422: 1, L0761: 1, L0646: 1, L0804: 1,		

							L0352: 1, H0670: 1, L0744: 1, L0740: 1, L0780: 1, L0759: 1 and H0506: 1.	
HPCTR60	HPCTR60R	1813	307 - 495	3988			L0803: 2, H0413: 1, L0650: 1, L0666: 1, H0689: 1, H0659: 1, H0658: 1, L0758: 1, L0759: 1 and S0242: 1.	
HPCTT47	HPCTT47R	1814	3 - 128	3989	Gly-4 to Lys-9.			
HPCTV40	HPCTV40R	1815	3 - 377	3990				
HPCTV53	HPCTV53R	1816	2 - 274	3991	Pro-7 to Ala-13.			
HPCTV92	HPCTV92R	1817	2 - 205	3992				
HPCTX22	HPCTX22R	1818	1 - 153	3993	Asn-27 to Lys-36.		L0439: 11, L0740: 10, L0752: 10, L0659: 8, L0748: 7, L0005: 6, S0358: 6, L0471: 6, S0214: 6, L0803: 6, L0517: 6, L0666: 6, L0759: 6, L0664: 5, L0665: 5, S0126: 5, H0574: 4, H0156: 4, L0646: 4, L0771: 4, L0766: 4, S0374: 4, H0659: 4, L0754: 4, L0749: 4, L0731: 4, L0362: 4, H0170: 3, H0341: 3, H0632: 3, S0003: 3, H0413: 3, H0529: 3, L0369: 3,	

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HPCTY38	HPCTY38R	1819	381 - 578	3994	L0666: 19, L0752: 14, S0358: 12, L0770: 10, L0439: 10, L0754: 10, L0659: 8, H0574: 7, L0663: 7, L0664: 7, H0659: 7, L0758: 7, L0759: 7, S0408: 6, H0519: 6, L0740: 6, L0750: 6, L0731: 6,		

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HPDOA92	HPDOA92R	1820	57 - 209	3995	Asp-1 to Leu-6.				
HPDOF32	HPDOF32R	1821	1 - 99	3996					
HPDOF81	HPDOF81R	1822	3 - 287	3997	Gln-20 to Leu-25.				
HPDOP05	HPDOP05R	1823	2 - 412	3998	Asp-11 to Val-19, Cys-36 to Asp-58, Lys-102 to Lys-111, Ile-115 to Ala-125, Val-127 to Gln-132.		L0747: 12, L0750: 12, H0052: 9, H0547: 8, H0659: 8, L0439: 8, L0752: 8, S0360: 7, S0408: 7, S0222: 6, S0010: 6, H0494: 6, H0144: 6, H0657: 5, S0358: 5, H0393: 5, H0373: 5, H0551: 5, L0775: 5, L0666: 5, L0758: 5, H0542: 5, H0486: 4, H0013: 4, H0545: 4, H0046: 4, L0471: 4, H0687: 4,		

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HPDOP20	HPDOP20R	1824	3 - 512	3999				
HPDOS87	HPDOS87R	1825	3 - 272	4000				
HPDOU54	HPDOU54R	1826	3 - 287	4001			H0694: 48, L0777: 14, H0521: 11, L0794: 10, L0748: 10, L0747: 10, S0214: 9, S0360: 8,	

		S0003: 8, H0644: 8, L0439: 8, H0553: 7, L0662: 7, L0659: 7, L0588: 7, H0543: 7, H0038: 6, L0646: 6, H0436: 6, L0740: 6, H0341: 5, S0358: 5, H0580: 5, H0545: 5, H0494: 5, L0666: 5, L0665: 5, L0779: 5, L0599: 5, H0542: 5, H0656: 4, H0486: 4, H0046: 4, H0014: 4, H0551: 4, S0440: 4, H0529: 4, L0764: 4, L0809: 4, S0126: 4, S0406: 4, L0757: 4, S0436: 4, L0591: 4, L0485: 4, L0362: 4, H0423: 4, H0624: 3, S0376: 3, S0444: 3, S0408: 3, S0410: 3, H0581: 3, H0031: 3, H0090: 3, S0142: 3, L0770: 3, L0637: 3, L0772: 3, L0521: 3, L0766: 3, L0774: 3, L0663: 3, L0664: 3, T0068: 3, H0547: 3, H0539: 3, L0758: 3,				

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HPDOZ43	HPDOZ43R	1827	1 - 504	4002		L0762: 1, L0763: 1, L0761: 1, L0773: 1, L0768: 1, L0386: 1, L0650: 1, L0375: 1, L0651: 1, L0654: 1, L0776: 1, L0527: 1, L0526: 1, L0518: 1, L0519: 1, L0545: 1, L0787: 1, L4501: 1, S0428: 1, S0216: 1, H0144: 1, H0691: 1, S0148: 1, H0519: 1, H0435: 1, H0658: 1, H0660: 1, H0666: 1, S0330: 1, S0152: 1, S0044: 1, H0479: 1, S0390: 1, S3014: 1, L0744: 1, L0750: 1, L0756: 1, L0752: 1, L0755: 1, L0731: 1, H0707: 1, L0594: 1, L0361: 1, S0026: 1, H0665: 1, S0196: 1, H0422: 1, S0458: 1 and H0506: 1.		
HPDPC65	HPDPC65RA	1828	2 - 178	4003					
HPDPC90	HPDPC90RA	1829	294 - 485	4004	Pro-6 to Gly-35, Arg-41 to Glu-47.				
HPDPH14	HPDPH14R	1830	94 - 291	4005					

HPDPK37	HPDPK37R	1831	1 - 420	4006				
HPDPN83	HPDPN83R	1832	365 - 3	4007		L0784: 2, H0428: 1, H0644: 1, S0366: 1, L0659: 1, L0636: 1, L0789: 1 and H0658: 1.		
HPDPP69	HPDPP69R	1833	260 - 463	4008		L0766: 2 and H0658: 2.		
HPDPQ10	HPDPQ10R	1834	369 - 581	4009	Gln-15 to Arg-20, Arg-35 to Ser-40.			
HPDPQ16	HPDPQ16R	1835	244 - 456	4010	Ile-5 to Lys-20.	L0794: 4, H0351: 3, H0083: 2, H0520: 2, H0658: 2, H0657: 1, H0341: 1, S0358: 1, L0586: 1, L0021: 1, T0110: 1, H0328: 1, H0040: 1, H0616: 1, H0625: 1, S0438: 1, S0440: 1, S0150: 1, H0130: 1, H0641: 1, L0800: 1, L0768: 1, L0803: 1, L0776: 1, L0657: 1, H0660: 1, S0328: 1, S0380: 1, S0406: 1, L0747: 1, H0343: 1, H0136: 1, H0423: 1, H0422: 1 and S0424: 1.		
HPDPR73	HPDPR73R	1836	80 - 463	4011	Asp-28 to His-35, Phe-43 to Trp-48, Asn-81 to Arg-86.			

HPDPS51	HPDPS51R	1837	2 - 214	4012		L0770: 4, L0771: 4, L0769: 3, L0757: 3, L0766: 2, L0779: 2, L0758: 2, H0170: 1, H0686: 1, S0476: 1, H0586: 1, L0637: 1, L0761: 1, L0803: 1, L0774: 1, L0776: 1, L0659: 1, L0809: 1, L0791: 1, H0658: 1, H0696: 1, S3012: 1, S0390: 1, L0747: 1, L0752: 1, L0753: 1, L0759: 1, S0434: 1, L0592: 1 and H0543: 1.		
HPDPS90	HPDPS90R	1838	2 - 421	4013				
HPDPT86	HPDPT86R	1839	378 - 533	4014	Asp-17 to Asn-30.	L0439: 4, H0658: 2, S0474: 1, L0794: 1, L0804: 1, L0791: 1, L0755: 1 and L0599: 1.		
HPDPU66	HPDPU66R	1840	2 - 262	4015				
HPDPX12	HPDPX12RP00B	1841	2 - 418	4016				
HPDPY83	HPDPY83RP00B	1842	148 - 405	4017	Lys-32 to Glu-39, Glu-43 to Ala-50, Ala-52 to Glu-80.			
HPDQC34	HPDQC34R	1843	1 - 693	4018				
HPDQG58	HPDQG58R	1844	2 - 235	4019				
HPDQH11	HPDQH11R	1845	2 - 334	4020				

HPDQH34	HPDQH34R	1846	105 - 308	4021	Gln-12 to Ser-19, Gln-40 to Gln-54.			
HPDQI50	HPDQI50R	1847	3 - 545	4022		H0052: 11, L0439: 10, L0775: 8, H0046: 7, L0748: 7, L0438: 6, L0750: 6, L0666: 5, L0599: 5, S0358: 4, H0620: 4, H0038: 4, H0413: 4, L0369: 4, L0769: 4, L0659: 4, L0665: 4, S0328: 4, L0758: 4, S0418: 3, S0442: 3, S0410: 3, H0619: 3, H0599: 3, L0662: 3, L0768: 3, L0774: 3, L0653: 3, H0660: 3, H0521: 3, L0731: 3, S0434: 3, L0601: 3, S0026: 3, S0424: 3, H0556: 2, T0002: 2, H0295: 2, H0583: 2, H0656: 2, S0376: 2, S0444: 2, H0580: 2, S0045: 2, S0046: 2, S0222: 2, H0592: 2, H0586: 2, N0009: 2, H0013: 2, H0575: 2, H0618: 2, H0318: 2, H0196: 2, H0012: 2, H0373: 2,			

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HPDQI55	HPDQI55R	1848	1 - 441	4023	L0779: 5, L0803: 4, H0170: 3, L0663: 3, L0777: 3, H0687: 2, H0328: 2, H0038: 2, L0521: 2, L0809: 2, L0759: 2, L0589: 2, H0171: 1, S0046: 1, S0300: 1, L0717: 1, H0369: 1, H0550: 1, S0222: 1, H0586: 1, H0574: 1, H0042: 1, S0010: 1, H0544: 1, H0620: 1, H0014: 1,		

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HPDQI70	HPDQI70R	1849	2 - 646	4024				
HPDQL55	HPDQL55R	1850	256 - 711	4025	Pro-5 to Arg-25, Lys-32 to Ser-39, Pro-63 to Pro-79, Pro-115 to His-121.	L0774: 3, L0809: 2, H0483: 1, H0306: 1, H0599: 1, H0618: 1, H0083: 1, H0644: 1, H0617: 1, H0606: 1, H0087: 1, L0369: 1, L0763: 1, L0643: 1, L0662: 1, L0794: 1, L0804: 1, L0790: 1, L0665: 1, H0658: 1, H0696: 1, L0748: 1, L0780: 1 and L0757: 1.		
HPDQR20	HPDQR20R	1851	1 - 639	4026		L0777: 21, L0748: 16, L0439: 12, S0360: 9,		

		L0659: 9, L0666: 9, L0803: 8, L0662: 7, L0747: 7, L0794: 6, L0663: 5, S0406: 5, L0770: 4, L0731: 4, L0758: 4, S0026: 4, S0356: 3, L0717: 3, H0156: 3, L0769: 3, L0809: 3, L0664: 3, H0520: 3, H0672: 3, H0521: 3, H0696: 3, L0750: 3, S0192: 3, H0542: 3, H0423: 3, H0624: 2, H0657: 2, S0420: 2, S0358: 2, S0376: 2, S0408: 2, H0013: 2, S0003: 2, S0214: 2, H0264: 2, H0412: 2, H0413: 2, S0440: 2, L0764: 2, L0766: 2, L0804: 2, L0774: 2, L0775: 2, L0806: 2, L0655: 2, L0665: 2, S0374: 2, L0438: 2, H0547: 2, H0519: 2, H0689: 2, H0660: 2, S0380: 2, H0522: 2, S0206: 2, L0749: 2, L0752: 2, L0759: 2, L0361: 2,			

		S0242: 2, H0170: 1, H0171: 1, L0448: 1, H0685: 1, H0716: 1, S0114: 1, H0656: 1, L0785: 1, S0400: 1, S0442: 1, S0444: 1, S0300: 1, S0222: 1, H0431: 1, H0586: 1, H0632: 1, L0623: 1, H0069: 1, H0036: 1, H0581: 1, H0309: 1, H0263: 1, H0327: 1, H0545: 1, H0150: 1, L0471: 1, H0024: 1, H0014: 1, T0010: 1, H0083: 1, H0252: 1, H0615: 1, H0688: 1, H0622: 1, L0483: 1, H0068: 1, S0366: 1, H0598: 1, H0163: 1, H0090: 1, H0040: 1, T0067: 1, H0623: 1, T0069: 1, H0494: 1, S0372: 1, S0448: 1, H0714: 1, H0641: 1, S0142: 1, S0210: 1, L0369: 1, L0646: 1, L0641: 1, L0771: 1, L0387: 1, L0651: 1, L0378: 1, L0653: 1,				

HPDQR88	HPDQR88R	1852	2 - 550	4027	Gln-121 to Glu-136, Ala-153 to Ser-162, Ala-176 to Ser-182.	L0542: 1, L0647: 1, L0787: 1, H0658: 1, H0670: 1, H0648: 1, H0539: 1, H0710: 1, S0332: 1, H0478: 1, H0627: 1, L0755: 1, S0436: 1, L0605: 1, L0362: 1, H0667: 1, S0276: 1, H0543: 1, H0422: 1, H0506: 1 and H0352: 1.		
HPDQS14	HPDQS14R	1853	113 - 325	4028				
HPDQS25	HPDQS25R	1854	25 - 273	4029				
HPDQS63	HPDQS63R	1855	25 - 258	4030	Phe-25 to Arg-34, Cys-51 to His-56, Glu-66 to Ser-75.			
HPDQS66	HPDQS66R	1856	134 - 322	4031		H0658: 2, L0745: 2, S0422: 1, H0648: 1 and L0731: 1.		
HPDQS76	HPDQS76R	1857	41 - 175	4032	His-2 to Trp-13, Lys-22 to Cys-31.	L0748: 9, L0774: 3, H0331: 2, H0632: 2, L0526: 2, H0658: 2, L0581: 2, H0574: 1 and L0790: 1.		
HPDQT32	HPDQT32R	1858	3 - 410	4033	Gly-17 to Glu-26, Lys-32 to Leu-37, Phe-46 to Thr-52,	H0542: 11, H0265: 7, H0543: 7, L0751: 5, S0424: 5, H0556: 4,		

	Ile-103 to Gly-109, Lys-128 to Gln-136.				S0420: 4, S0010: 4, S0142: 4, L0659: 4, L0743: 4, L0747: 4, L0753: 4, H0657: 3, H0370: 3, H0618: 3, H0251: 3, H0545: 3, H0457: 3, H0620: 3, H0644: 3, H0560: 3, L0775: 3, L0663: 3, H0672: 3, S3012: 3, L0748: 3, S0212: 2, S0418: 2, S0360: 2, H0580: 2, S0222: 2, H0427: 2, H0253: 2, S0049: 2, H0327: 2, L0471: 2, H0617: 2, H0124: 2, S0366: 2, H0412: 2, L0667: 2, L0655: 2, H0690: 2, H0682: 2, H0658: 2, H0670: 2, H0660: 2, H0627: 2, S0027: 2, L0741: 2, L0740: 2, H0506: 2, H0170: 1, T0002: 1, H0686: 1, H0381: 1, H0484: 1, H0255: 1, H0663: 1, H0664: 1, H0638: 1, S0358: 1, H0675: 1, H0637: 1, S0468: 1,	

		H0208: 1, S0132: 1, S0278: 1, S0005: 1, H0497: 1, H0156: 1, L0021: 1, H0318: 1, H0052: 1, T0103: 1, H0544: 1, H0178: 1, H0172: 1, S0051: 1, H0083: 1, H0355: 1, H0510: 1, H0594: 1, H0188: 1, H0687: 1, H0622: 1, L0194: 1, L0483: 1, T0006: 1, H0033: 1, H0424: 1, H0031: 1, H0606: 1, H0166: 1, H0674: 1, H0591: 1, H0063: 1, H0087: 1, T0067: 1, L0351: 1, H0494: 1, H0561: 1, S0352: 1, S0440: 1, H0633: 1, H0647: 1, S0144: 1, S0344: 1, S0426: 1, H0529: 1, L0369: 1, L0372: 1, L0646: 1, L0800: 1, L0662: 1, L0768: 1, L0766: 1, L0650: 1, L0376: 1, L0776: 1, L0657: 1, L0636: 1, L0542: 1, L0783: 1, L0787: 1,			

					L0666: 1, L0664: 1, L0665: 1, H0593: 1, H0684: 1, H0435: 1, H0659: 1, S0328: 1, S0330: 1, H0539: 1, S0378: 1, H0521: 1, H0555: 1, H0631: 1, L0744: 1, L0750: 1, L0777: 1, L0752: 1, L0757: 1, L0758: 1, L0596: 1, L0485: 1, L0593: 1, L0601: 1, S0011: 1, S0026: 1, S0192: 1 and H0352: 1.		
					Pro-25 to Thr-32.	L0731: 4, L0775: 3, L0740: 3, H0170: 2, S0426: 2, L0770: 2, L0646: 2, L0766: 2, L0754: 2, H0344: 1, H0295: 1, H0393: 1, H0592: 1, H0318: 1, S6028: 1, H0038: 1, H0551: 1, L0642: 1, L0803: 1, L0774: 1, L0776: 1, L0663: 1, H0658: 1, S0332: 1, L0748: 1, L0777: 1, L0752: 1, L0757: 1, H0445: 1, S0424: 1 and S0384: 1.	
			4034				
		3 - 269					
		1859					
	HPDQU81R						
HPDQU81							

HPDQV07	HPDQV07R	1860	2 - 421	4035				
HPDQV49	HPDQV49R	1861	246 - 401	4036				
HPDQW39	HPDQW39R	1862	68 - 550	4037	Asn-20 to Asp-25, Met-75 to Asp-81, Arg-144 to Thr-152.	AR104: 42, AR089: 22, AR060: 7, AR096: 4, AR055: 2, AR061: 1		
HPDQX13	HPDQX13R	1863	113 - 391	4038	Lys-1 to Leu-23, Ala-27 to Ser-34, Gly-36 to Phe-44.			
HPDQY23	HPDQY23R	1864	3 - 476	4039				
HPDQY65	HPDQY65R	1865	3 - 437	4040				
HPDQY88	HPDQY88R	1866	164 - 340	4041				
HPDQY95	HPDQY95R	1867	29 - 430	4042	Leu-11 to Cys-24, Leu-30 to Ser-36, Gly-93 to Glu-99.			
HPDQZ30	HPDQZ30R	1868	212 - 538	4043				
HPDQZ65	HPDQZ65R	1869	3 - 506	4044	Ser-120 to Tyr-126, Gly-137 to Arg-142, Ser-160 to Ser-168.			
HPDRA44	HPDRA44R	1870	1 - 525	4045				
HPDRA50	HPDRA50R	1871	1 - 384	4046				
HPDRF65	HPDRF65R	1872	230 - 559	4047	Glu-1 to Pro-9.			
HPDRG34	HPDRG34R	1873	79 - 270	4048		H0031: 2, H0135: 1, H0272: 1 and H0658: 1.		
HPDRG73	HPDRG73R	1874	2 - 481	4049	Ala-2 to Gly-8.			
HPDRM77	HPDRM77R	1875	1 - 177	4050				
HPDRM93	HPDRM93R	1876	3 - 302	4051				
HPDRO04	HPDRO04R	1877	2 - 307	4052	Gly-1 to Cys-24,			

HPDRO64	HPDRO64R	1878	249 - 509	4053	Cys-27 to Gly-43, Ala-46 to Trp-54, Ala-56 to Arg-68, Phe-83 to Arg-93.	S0132: 1, H0156: 1, H0575: 1, H0551: 1, H0658: 1, H0670: 1, H0555: 1 and L0439: 1.		
HPDRP36	HPDRP36R	1879	3 - 323	4054	Thr-4 to His-17, Ser-21 to Gln-27.	L0766: 11, L0752: 7, L0754: 5, H0547: 4, S0358: 3, S0022: 3, L0756: 3, L0777: 3, H0625: 2, L0065: 2, S0438: 2, L0805: 2, L0776: 2, H0658: 2, S0328: 2, L0740: 2, L0745: 2, L0747: 2, L0750: 2, L0731: 2, L0601: 2, H0542: 2, H0543: 2, H0423: 2, S0424: 2, H0341: 1, H0661: 1, H0664: 1, H0306: 1, H0402: 1, H0638: 1, S0360: 1, H0580: 1, H0645: 1, H0443: 1, H0357: 1, H0592: 1, H0587: 1, H0574: 1, H0486: 1, H0270: 1, H0156: 1, T0048: 1, H0052: 1,	Thr-57 to Phe-62, Gly-68 to Phe-73, His-86 to Tyr-92, Asp-97 to Phe-103.		

					H0375: 1, H0687: 1, H0328: 1, H0169: 1, H0598: 1, H0551: 1, H0413: 1, T0042: 1, H0561: 1, S0422: 1, H0529: 1, L0520: 1, L0536: 1, L0772: 1, L0649: 1, L0803: 1, L0809: 1, L0666: 1, L0665: 1, H0144: 1, H0520: 1, H0519: 1, H0659: 1, H0651: 1, S0380: 1, H0696: 1, S0404: 1, S0406: 1, H0555: 1, L0744: 1, L0749: 1, L0753: 1, L0757: 1, L0759: 1, H0445: 1, S0434: 1, S0436: 1, L0599: 1, L0608: 1, L0594: 1 and H0422: 1.		
HPDRP41	HPDRP41R	1880	2 - 622	4055	Gly-8 to Val-14, Gln-20 to Asp-27, Met-79 to His-88, Arg-171 to Tyr-183, Pro-198 to Gly-204.			
HPDRQ66	HPDRQ66R	1881	27 - 290	4056		L0748: 3, H0556: 2, S0420: 2, S0045: 2, H0171: 1, H0265: 1, S0134: 1, H0657: 1,		

HPDRQ84	HPDRQ84R	1882	1 - 441	4057	Gly-6 to Ser-16, Glu-19 to Ala-33, Glu-44 to Lys-60, Ile-135 to Lys-147.	H0341: 1, S0110: 1, H0661: 1, H0305: 1, H0580: 1, S0007: 1, S0046: 1, S0132: 1, S0278: 1, H0257: 1, H0069: 1, H0575: 1, T0048: 1, H0327: 1, H0252: 1, H0634: 1, H0412: 1, H0059: 1, H0633: 1, S0344: 1, H0529: 1, L0521: 1, L0806: 1, L0805: 1, H0435: 1, H0658: 1, H0672: 1, S0378: 1, L0747: 1, L0599: 1, S0026: 1 and H0542: 1.			
HPDRR71	HPDRR71R	1883	1 - 543	4058	Ala-3 to Lys-11, Gly-112 to Glu-117.				
HPDRS43	HPDRS43R	1884	59 - 211	4059					
HPDRS46	HPDRS46R	1885	3 - 332	4060	Lys-94 to Ser-100.				
HPDRS87	HPDRS87R	1886	2 - 508	4061	Lys-32 to Glu-38, Ser-44 to Ser-55, Gln-67 to Gly-78, Glu-85 to Glu-90, Gly-108 to Ser-114, Phe-149 to Lys-158.				

HPDRT36	HPDRT36R	1887	59 - 214	4062	Lys-25 to Arg-36.	L0754: 19, L0731: 18, H0521: 15, L0777: 11, L0766: 8, L0755: 7, H0581: 6, L0659: 6, L0751: 6, H0486: 5, H0266: 5, H0553: 5, L0662: 5, L0663: 5, H0144: 5, L0439: 5, S0276: 5, H0638: 4, S0360: 4, H0644: 4, S0374: 4, S0330: 4, L0740: 4, L0756: 4, L0599: 4, L0362: 4, H0423: 4, H0657: 3, H0663: 3, H0580: 3, H0575: 3, S0003: 3, H0622: 3, H0124: 3, H0264: 3, H0623: 3, S0002: 3, L0520: 3, L0764: 3, L0775: 3, L0655: 3, L0519: 3, H0519: 3, H0659: 3, H0658: 3, S0328: 3, L0744: 3, L0747: 3, L0759: 3, S0026: 3, S0194: 3, H0624: 2, H0656: 2, H0341: 2, S0354: 2, S0408: 2, S0046: 2, H0619: 2, H0013: 2, H0250: 2,		

		H0545: 2, L0471: 2, H0428: 2, L0142: 2, H0551: 2, T0067: 2, H0561: 2, H0641: 2, S0210: 2, L0772: 2, L0771: 2, L0794: 2, L0803: 2, L0661: 2, L0544: 2, L0793: 2, L0666: 2, L0665: 2, S0216: 2, L0565: 2, H0648: 2, S0152: 2, H0522: 2, H0555: 2, H0345: 2, S0027: 2, L0750: 2, L0779: 2, L0752: 2, L0758: 2, H0445: 2, S0434: 2, L0591: 2, L0594: 2, H0653: 2, H0422: 2, H0159: 1, S0134: 1, H0583: 1, H0650: 1, S0212: 1, H0661: 1, H0662: 1, H0402: 1, S0358: 1, S0444: 1, T0008: 1, S0045: 1, S0132: 1, H0411: 1, H0369: 1, H0370: 1, T0039: 1, T0060: 1, H0042: 1, H0590: 1, T0048: 1, H0318: 1, H0596: 1, L0738: 1,				

		H0046: 1, L0157: 1, H0565: 1, H0024: 1, S0388: 1, H0267: 1, S0250: 1, S0214: 1, H0328: 1, H0030: 1, H0383: 1, H0673: 1, H0169: 1, H0316: 1, H0163: 1, H0090: 1, H0591: 1, H0040: 1, H0634: 1, H0488: 1, H0268: 1, H0412: 1, H0413: 1, H0056: 1, L0435: 1, H0494: 1, S0370: 1, H0646: 1, H0652: 1, S0344: 1, S0426: 1, L0371: 1, L0646: 1, L0800: 1, L0765: 1, L0648: 1, L0768: 1, L0389: 1, L0552: 1, L0774: 1, L0805: 1, L0653: 1, L0776: 1, L0658: 1, L0542: 1, L0809: 1, L0647: 1, H0701: 1, H0691: 1, S0126: 1, H0711: 1, H0683: 1, H0518: 1, S0454: 1, S0013: 1, H0479: 1, S0206: 1, L0743: 1, S0260: 1, H0343: 1,			

HPDRT37	HPDRT37R	1888	3 - 560	4063	Ala-2 to Asp-9, Arg-18 to Gly-26, Asn-34 to Arg-43, Ala-52 to Asp-57.	L0584: 1, H0542: 1 and S0412: 1.		
HPDRT38	HPDRT38R	1889	2 - 196	4064	Leu-48 to Lys-63.			
HPDRU03	HPDRU03R	1890	2 - 334	4065				
HPDRU37	HPDRU37R	1891	1 - 297	4066	Glu-11 to Pro-16, Arg-46 to Tyr-56, Asp-63 to Asp-69.			
HPDRU71	HPDRU71R	1892	458 - 703	4067				
HPDRV73	HPDRV73R	1893	1 - 528	4068	Glu-54 to Val-64, Leu-97 to Leu-105.			
HPDRV79	HPDRV79R	1894	300 - 596	4069	Ser-14 to Gly-20.	L0794: 6, L0758: 6, L0747: 5, L0770: 4, L0809: 4, H0620: 3, L0764: 3, H0658: 3, H0618: 2, H0012: 2, H0135: 2, L0769: 2, L0771: 2, L0773: 2, L0662: 2, L0803: 2, L0532: 2, S0126: 2, L0756: 2, S6024: 1, S0282: 1, H0638: 1, S0420: 1, L0717: 1, S0222: 1, H0441: 1, H0333: 1, L0622: 1, H0309: 1, H0597: 1, S0388: 1, S0051: 1,		

HPDRW09	HPDRW09R	1895	1 - 231	4070	Ala-31 to Gln-37, Lys-63 to Ser-69.	T0010: 1, H0271: 1, H0687: 1, L0483: 1, H0604: 1, H0030: 1, H0181: 1, H0617: 1, H0412: 1, L0667: 1, L0646: 1, L0800: 1, L0643: 1, L0374: 1, L0364: 1, L0766: 1, L0649: 1, L0804: 1, L0523: 1, L0805: 1, L0655: 1, L0607: 1, L0657: 1, L0559: 1, L0659: 1, L0517: 1, L0529: 1, L0647: 1, L0787: 1, L0789: 1, L0666: 1, L0663: 1, L0665: 1, T0068: 1, L0438: 1, H0670: 1, H0627: 1, L0748: 1, L0439: 1, L0751: 1, L0777: 1, L0731: 1, L0757: 1, S0031: 1, L0605: 1, H0542: 1, H0543: 1, H0423: 1, L0697: 1 and S0462: 1.		
HPDRW51	HPDRW51R	1896	192 - 587	4071				
HPDRY37	HPDRY37R	1897	2 - 322	4072	Pro-3 to Gly-8, Pro-70 to Pro-85.			

HPDRZ11	HPDRZ11R	1898	1 - 354	4073	Arg-13 to Gly-26, Asn-35 to Gln-40.			
HPDRZ29	HPDRZ29R	1899	3 - 509	4074	Val-30 to Trp-36, Ala-53 to Glu-67.	H0457: 9, L0766: 7, H0046: 5, H0650: 4, H0634: 3, L0659: 3, L0439: 3, H0716: 2, H0656: 2, H0254: 2, H0255: 2, H0333: 2, H0253: 2, H0081: 2, H0083: 2, H0628: 2, L0761: 2, L0800: 2, H0658: 2, L0750: 2, H0543: 2, H0422: 2, H0265: 1, H0657: 1, S0001: 1, S0420: 1, S0354: 1, S0376: 1, S0360: 1, H0722: 1, S0045: 1, H0550: 1, S0222: 1, H0614: 1, H0613: 1, H0069: 1, H0427: 1, H0575: 1, H0318: 1, H0581: 1, H0052: 1, H0327: 1, H0545: 1, H0041: 1, H0050: 1, H0354: 1, H0266: 1, H0179: 1, H0428: 1, H0622: 1, S0366: 1, S0036: 1, H0087: 1, H0264: 1, H0488: 1, L0435: 1,		

					H0022: 1, T0041: 1, H0560: 1, S0142: 1, S0426: 1, H0695: 1, H0529: 1, L0644: 1, L0764: 1, L0662: 1, L0649: 1, L0375: 1, L0805: 1, L0658: 1, L0809: 1, L0789: 1, L0792: 1, L0532: 1, L0663: 1, L0664: 1, L0665: 1, H0670: 1, H0672: 1, S0330: 1, H0539: 1, H0518: 1, H0521: 1, S0406: 1, H0555: 1, H0436: 1, S3012: 1, S3014: 1, S0027: 1, S0028: 1, L0744: 1, L0749: 1, L0756: 1, H0445: 1, S0434: 1, H0136: 1, S0276: 1 and H0542: 1.		
HPDVA01	HPDVA01R	1900	774 - 484	4075				
HPDVA06	HPDVA06R	1901	243 - 380	4076				
HPDVB37	HPDVB37R	1902	40 - 315	4077	Pro-2 to Lys-18.		L0748: 10, L0803: 3, L0439: 3, L0751: 3, L0626: 2, L0809: 2, L0790: 2, H0658: 2, L0744: 2, L0740: 2, L0754: 2, L0747: 2, L0756: 2, L0752: 2,	

						L0758: 2, H0170: 1, H0645: 1, H0351: 1, H0370: 1, H0497: 1, S0388: 1, T0067: 1, L0772: 1, L0643: 1, L0662: 1, L0794: 1, L0804: 1, L0774: 1, L0776: 1, L0666: 1, L0663: 1, L0665: 1, L0438: 1, S0044: 1, L0745: 1, L0749: 1, L0755: 1, L0757: 1 and S0031: 1.		
HPDVB70	HPDVB70R	1903	2 - 778	4078				
HPDVC28	HPDVC28R	1904	50 - 136	4079				
HPDVE55	HPDVE55R	1905	89 - 220	4080	Pro-8 to Pro-13.			
HPDVG06	HPDVG06R	1906	3 - 326	4081	Gln-22 to Val-33, Pro-37 to Gly-45, Ser-56 to Thr-65, Arg-82 to Thr-92.			
HPDVG67	HPDVG67R	1907	193 - 450	4082	Glu-79 to Gln-86.			
HPDVI25	HPDVI25R	1908	1 - 510	4083	Met-32 to Lys-37, Asp-44 to Ala-60.			
HPDVI95	HPDVI95R	1909	3 - 338	4084	Ala-32 to Thr-42, Lys-55 to Phe-60, Asp-85 to Gly-90, Arg-95 to Thr-100.			
HPDVK74	HPDVK74R	1910	3 - 425	4085	Ile-20 to Gly-29, Asn-82 to Thr-87.			

HPDVK79	HPDVK79R	1911	61 - 597	4086	Arg-8 to Lys-13, Gly-35 to Lys-42, Ala-48 to Lys-54.			
HPDVK93	HPDVK93R	1912	2 - 697	4087				
HPDVL36	HPDVL36R	1913	8 - 265	4088				
HPDVL45	HPDVL45R	1914	1 - 303	4089	Gly-1 to Phe-8, Pro-39 to Thr-61, Pro-66 to Phe-71, Arg-84 to Pro-89.	H0656: 3, S0218: 1, S0116: 1, S0356: 1, H0586: 1, H0333: 1, H0486: 1, H0427: 1, S0280: 1, H0545: 1, H0135: 1, H0087: 1, H0695: 1, H0547: 1, H0435: 1, H0658: 1, H0670: 1, H0672: 1, H0521: 1, L0439: 1, H0543: 1 and H0423: 1.		
HPDVL52	HPDVL52R	1915	60 - 350	4090	Ala-5 to Val-11, Leu-15 to Lys-23, Lys-39 to Ile-44.	H0656: 1, S0116: 1, S0376: 1, T0110: 1, T0042: 1, H0494: 1, L0649: 1, L0774: 1, L0665: 1, H0658: 1, L0748: 1, L0757: 1, H0667: 1 and H0543: 1.		
HPDVM61	HPDVM61R	1916	101 - 364	4091	Lys-13 to Leu-24, Arg-31 to Pro-54.			
HPDVM63	HPDVM63R	1917	1 - 576	4092	Ala-34 to Thr-46, Asp-59 to Lys-73, Ala-86 to Gln-94, Pro-99 to Gln-109, Glu-129 to Thr-141,			

HPDVM86	HPDVM86R	1918	2 - 406	4093	Asp-160 to Asn-168.	Ala-33 to Cys-41, Thr-58 to Pro-66.	H0521: 43, S0278: 39, S0144: 30, S0142: 26, H0522: 18, S0344: 15, S0002: 14, H0638: 13, H0580: 11, H0641: 10, L0755: 10, L0599: 10, H0250: 9, H0271: 8, H0622: 8, H0575: 7, S0426: 7, L0775: 7, L0776: 7, L0751: 7, L0754: 7, H0125: 6, S0376: 6, S0132: 6, H0069: 6, H0090: 6, S0360: 5, H0486: 5, S0022: 5, L0731: 5, H0584: 4, H0657: 4, S0354: 4, S0358: 4, S0140: 4, H0581: 4, H0674: 4, L0764: 4, L0657: 4, L0665: 4, S0052: 4, S0428: 4, L0749: 4, L0752: 4, H0445: 4, L0591: 4, H0656: 3, L0785: 3, H0663: 3, H0370: 3, H0042: 3, H0004: 3, H0318: 3, H0031: 3, H0059: 3, L0769: 3,		

		L0372: 3, L0646: 3, L0806: 3, L0659: 3, L0666: 3, S0126: 3, H0658: 3, H0518: 3, H0555: 3, L0750: 3, H0255: 2, H0662: 2, H0637: 2, H0431: 2, H0574: 2, H0632: 2, H0545: 2, H0083: 2, S0214: 2, H0644: 2, H0032: 2, H0634: 2, S0440: 2, H0652: 2, L0770: 2, L0637: 2, L0771: 2, L0653: 2, L0783: 2, L0664: 2, H0660: 2, H0134: 2, H0187: 2, S3014: 2, L0748: 2, L0777: 2, L0758: 2, S0434: 2, L0595: 2, L0601: 2, H0167: 1, H0159: 1, S0342: 1, S0114: 1, S0134: 1, H0650: 1, H0661: 1, H0664: 1, H0306: 1, H0402: 1, H0192: 1, S0418: 1, H0645: 1, H0393: 1, H0537: 1, T0104: 1, H0586: 1, H0497: 1, H0331: 1, H0101: 1,				

		H0635: 1, H0427: 1, H0309: 1, H0231: 1, H0544: 1, H0546: 1, H0046: 1, H0012: 1, H0620: 1, H0024: 1, H0107: 1, H0179: 1, H0416: 1, H0188: 1, S0003: 1, H0688: 1, H0029: 1, H0553: 1, L0142: 1, H0628: 1, L0055: 1, H0383: 1, H0673: 1, H0189: 1, H0124: 1, H0068: 1, H0063: 1, H0087: 1, S0472: 1, L0369: 1, L0762: 1, L0761: 1, L0772: 1, L0773: 1, L0662: 1, L0767: 1, L0387: 1, L0766: 1, L0649: 1, L0533: 1, L0522: 1, L0774: 1, L0784: 1, L0652: 1, L0655: 1, L0379: 1, L0629: 1, L0544: 1, L0367: 1, L0368: 1, L0787: 1, L0788: 1, S0053: 1, S0216: 1, S0374: 1, S0296: 1, H0682: 1, H0684: 1, S0328: 1, S0332: 1,				

						H0214: 1, S0404: 1, H0576: 1, L0779: 1, L0780: 1, L0757: 1, L0593: 1, S0011: 1, H0665: 1, H0542: 1, H0423: 1 and S0458: 1.		
HPDVO67	HPDVO67R	1919	1 - 465	4094	Glu-1 to Asp-6, Thr-11 to Glu-20, Val-61 to Gln-66.	AR039: 4, AR096: 4, AR052: 2, AR089: 2, AR061: 2, AR060: 2, AR104: 2, AR033: 1, AR055: 1, AR053: 0 L0666: 4, H0253: 2, H0622: 2, H0670: 2, L0743: 2, H0181: 1, L0372: 1, L0773: 1, L0767: 1, L0657: 1, L0665: 1, H0658: 1, L0751: 1, L0749: 1, L0779: 1, L0777: 1, L0758: 1 and L0593: 1.		
HPDVQ74	HPDVQ74R	1920	3 - 278	4095	Pro-1 to Ala-9, Arg-17 to Glu-25.			
HPDVQ82	HPDVQ82R	1921	29 - 421	4096		H0658: 2		
HPDVT30	HPDVT30R	1922	3 - 284	4097		L0754: 2, H0685: 1, T0010: 1, H0658: 1 and H0423: 1.		
HPDVT37	HPDVT37R	1923	1 - 333	4098				
HPDVU28	HPDVU28R	1924	91 - 693	4099	Val-1 to Glu-9, Pro-26 to Gly-31, Tyr-67 to Glu-74,			

HPDVU72	HPDVU72R	1925	3 - 548	4100	Phe-107 to Glu-118, Lys-162 to Arg-173.	Ser-1 to His-7, Thr-15 to Arg-29, His-31 to Val-42, Pro-52 to Pro-94, Glu-113 to Ala-131, Lys-161 to Arg-167.	L0777: 6, L0766: 5, L0749: 5, L0601: 4, L0758: 3, H0617: 2, L0769: 2, L0794: 2, L0805: 2, L0657: 2, L0665: 2, H0693: 2, S0028: 2, L0439: 2, L0751: 2, L0747: 2, L0779: 2, L0588: 2, S0114: 1, H0650: 1, H0657: 1, H0402: 1, H0638: 1, S0354: 1, S0360: 1, S0045: 1, S6026: 1, H0550: 1, H0156: 1, H0253: 1, H0421: 1, T0115: 1, H0150: 1, H0014: 1, S0051: 1, S6028: 1, H0688: 1, L0483: 1, H0181: 1, H0163: 1, H0090: 1, H0087: 1, H0560: 1, H0646: 1, S0210: 1, L0763: 1, L0638: 1, L0761: 1, L0784: 1, L0806: 1, L0776: 1, L0655: 1, L0659: 1, L0384: 1, L0789: 1, H0690: 1,		

							H0684: 1, H0658: 1, L0752: 1, L0755: 1, L0731: 1, L0757: 1, L0595: 1, S0276: 1 and H0506: 1.		
HPDVU88	HPDVU88R	1926	3 - 191	4101	Pro-6 to Ala-16.				
HPDVV78	HPDVV78R	1927	78 - 644	4102					
HPDWA35	HPDWA35R	1928	3 - 302	4103			H0658: 2		
HPDWA88	HPDWA88R	1929	3 - 560	4104					
HPDWB40	HPDWB40R	1930	175 - 306	4105	Arg-1 to Glu-8, Ala-31 to Trp-39.				
HPDWC30	HPDWC30R	1931	231 - 383	4106					
HPDWC75	HPDWC75R	1932	1 - 390	4107	Ala-3 to Ala-10, Pro-15 to Pro-23, Glu-79 to Ser-88, Pro-115 to Arg-122.				
HPDWD44	HPDWD44R	1933	214 - 471	4108			H0271: 13, H0436: 11, L0766: 8, H0581: 5, L0754: 5, S0242: 5, H0556: 4, H0635: 4, L0800: 4, L0662: 4, L0804: 4, L0655: 4, L0659: 4, L0789: 4, L0751: 4, L0757: 4, L0591: 4, S0356: 3, H0069: 3, H0416: 3, L0803: 3, L0747: 3, H0445: 3, H0423: 3, H0422: 3, H0395: 2,		

		S0134: 2, H0662: 2, H0402: 2, S0354: 2, S0046: 2, S0132: 2, H0587: 2, H0642: 2, H0014: 2, H0179: 2, H0644: 2, H0032: 2, H0090: 2, H0396: 2, H0633: 2, S0422: 2, L0375: 2, L0806: 2, L0607: 2, L0666: 2, L0663: 2, S0052: 2, S0053: 2, S0216: 2, H0521: 2, L0740: 2, L0779: 2, L0777: 2, L0758: 2, L0596: 2, L0599: 2, H0394: 1, S0114: 1, H0657: 1, H0656: 1, S0298: 1, H0306: 1, S0376: 1, H0411: 1, H0607: 1, H0632: 1, H0257: 1, H0492: 1, H0486: 1, L0021: 1, H0318: 1, H0196: 1, H0545: 1, H0457: 1, H0083: 1, S6028: 1, L0483: 1, H0591: 1, H0634: 1, H0623: 1, H0560: 1, H0641: 1, S0344: 1, L0770: 1, L0372: 1,			

						L0646: 1, L0794: 1, L0774: 1, L0653: 1, L0776: 1, L0657: 1, L0783: 1, L0664: 1, L0665: 1, S0428: 1, S0374: 1, H0689: 1, H0690: 1, H0658: 1, H0672: 1, S0378: 1, H0518: 1, H0576: 1, H0478: 1, S3014: 1, L0749: 1, H0543: 1 and S0458: 1.		
HPDWD67	HPDWD67R	1934	220 - 2	4109	Asp-65 to Gly-73.			
HPDWD69	HPDWD69R	1935	3 - 353	4110	Ser-1 to His-19, Val-86 to Pro-105, Pro-110 to Met-117.	L0588: 18, S0408: 16, S0007: 12, S0444: 11, H0677: 11, H0648: 10, L0769: 9, H0670: 9, S0328: 9, H0651: 8, S0406: 8, H0657: 7, H0341: 7, H0402: 7, H0659: 7, L0748: 7, H0543: 7, T0049: 6, H0251: 6, L0775: 6, L0742: 6, H0422: 6, L0471: 5, H0617: 5, S0440: 5, L0517: 5, S0374: 5, H0658: 5, H0696: 5, L0749: 5, H0423: 5, H0295: 4, S0114: 4, S0134: 4,		

		H0656: 4, H0639: 4, H0687: 4, H0606: 4, L0767: 4, L0518: 4, L5286: 4, H0682: 4, L0752: 4, L0759: 4, L0605: 4, L0361: 4, H0685: 3, H0294: 3, H0305: 3, S0356: 3, S0358: 3, S0360: 3, H0722: 3, S0046: 3, L0622: 3, H0486: 3, T0109: 3, T0003: 3, T0067: 3, H0412: 3, S0438: 3, S0422: 3, L0520: 3, L0371: 3, L0770: 3, L0768: 3, L0766: 3, L5574: 3, L0376: 3, L0776: 3, S0126: 3, H0689: 3, L0740: 3, L0758: 3, H0542: 3, H0352: 3, T0002: 2, H0159: 2, S0040: 2, H0713: 2, H0716: 2, S0218: 2, L0785: 2, H0661: 2, H0638: 2, H0125: 2, S0410: 2, H0351: 2, H0586: 2, H0587: 2, H0333: 2, H0492: 2, L0623: 2, S0182: 2,				

		H0581: 2, S0049: 2, H0083: 2, H0031: 2, H0163: 2, H0551: 2, H0059: 2, S0210: 2, L0762: 2, L0764: 2, L5564: 2, L0653: 2, L0655: 2, L0634: 2, L0526: 2, L0783: 2, L0543: 2, L0368: 2, H0691: 2, H0547: 2, H0690: 2, H0684: 2, S0330: 2, H0710: 2, L0754: 2, L0747: 2, L0750: 2, L0777: 2, L0755: 2, L0590: 2, L0581: 2, L0599: 2, L0608: 2, L0604: 2, L0362: 2, H0653: 2, H0721: 2, H0686: 1, S0430: 1, L0760: 1, S0116: 1, S0212: 1, H0484: 1, H0663: 1, H0306: 1, H0458: 1, H0459: 1, L0534: 1, L0005: 1, S0442: 1, S0376: 1, S0045: 1, S0132: 1, S0476: 1, H0393: 1, H0640: 1, H0411: 1, S0278: 1, H0455: 1, H0592: 1,					

		T0039: 1, T0060: 1, H0706: 1, S0010: 1, T0048: 1, H0318: 1, H0309: 1, H0596: 1, T0115: 1, L0040: 1, H0231: 1, H0546: 1, H0545: 1, H0009: 1, H0057: 1, H0018: 1, S0051: 1, H0510: 1, H0375: 1, H0109: 1, S0022: 1, H0328: 1, H0688: 1, H0039: 1, T0023: 1, T0006: 1, H0424: 1, H0628: 1, H0673: 1, H0708: 1, S0366: 1, S0036: 1, H0135: 1, H0040: 1, H0634: 1, H0063: 1, H0087: 1, H0116: 1, H0264: 1, H0413: 1, H0100: 1, L0564: 1, H0494: 1, H0561: 1, H0641: 1, H0646: 1, S0144: 1, S0344: 1, L0506: 1, L0761: 1, L0646: 1, L0771: 1, L0648: 1, L0521: 1, L0662: 1, L0387: 1, L0375: 1, L0806: 1, L0654: 1, L0661: 1,				

						L0807: 1, L0542: 1, L0519: 1, L0530: 1, L0790: 1, L0663: 1, H0144: 1, H0724: 1, H0660: 1, H0666: 1, H0672: 1, H0518: 1, H0521: 1, S0190: 1, H0134: 1, H0187: 1, H0436: 1, S3014: 1, S0028: 1, L0751: 1, L0779: 1, L0757: 1, S0031: 1, H0445: 1, S0436: 1, H0668: 1, S0026: 1, S0276: 1 and S0424: 1.			
HPDWD81	HPDWD81R	1936	1 - 378	4111	Asn-60 to Gly-72, Pro-83 to Trp-114, Ser-117 to Arg-126.				
HPDWE11	HPDWE11R	1937	2 - 121	4112	Arg-1 to Gln-9.				
HPDWE64	HPDWE64R	1938	248 - 559	4113		H0575: 2, L0002: 1, S0336: 1, H0487: 1, L0762: 1, L0637: 1, L0805: 1, L0659: 1, H0658: 1, L0777: 1 and L0731: 1.			
HPDWF93	HPDWF93R	1939	1 - 507	4114	Pro-3 to Pro-12.				
HPDWG51	HPDWG51R	1940	169 - 342	4115	Phe-1 to Cys-13, Gly-28 to Ser-35.	H0038: 5, H0616: 3, L0752: 3, S0418: 2, H0620: 2, H0547: 2, L0602: 2, H0521: 2,			

						L0751: 2, S0212: 1, S0282: 1, H0638: 1, S0358: 1, S0007: 1, H0261: 1, H0575: 1, S0346: 1, H0596: 1, L0471: 1, L0163: 1, H0071: 1, H0510: 1, S0003: 1, H0488: 1, S0038: 1, H0509: 1, H0649: 1, S0144: 1, L0803: 1, S0374: 1, H0519: 1, S0126: 1, H0658: 1, H0518: 1, S0013: 1, S0044: 1, L0743: 1, L0744: 1, L0748: 1, L0759: 1, L0599: 1 and S0424: 1.		
HPDWL56	HPDWL56R	1941	2 - 388	4116				
HPDWL70	HPDWL70R	1942	174 - 308	4117				
HPDWN46	HPDWN46R	1943	1 - 585	4118	Arg-21 to Gly-32, Pro-63 to Ser-79, Thr-92 to Pro-100, Glu-107 to Glu-126, Glu-133 to Ser-146, Ser-148 to Thr-157.	H0556: 30, H0659: 9, L0439: 9, S0406: 8, H0494: 7, S0360: 6, L0771: 6, H0634: 5, S0206: 5, L0777: 5, H0265: 4, H0657: 4, S0328: 4, S0152: 4, S0146: 4, L0748: 4, L0751: 4, L0749: 4, H0423: 4, S0040: 3, H0497: 3, H0623: 3,		

		H0529: 3, L0761: 3, L0665: 3, H0144: 3, H0555: 3, S0026: 3, H0656: 2, H0341: 2, S0212: 2, S0418: 2, S0356: 2, H0675: 2, S0046: 2, H0411: 2, H0586: 2, H0581: 2, H0615: 2, H0553: 2, H0591: 2, S0440: 2, S0422: 2, L0772: 2, L0438: 2, H0711: 2, H0521: 2, S0404: 2, S3014: 2, L0743: 2, L0740: 2, H0170: 1, H0171: 1, H0159: 1, H0686: 1, S0342: 1, H0294: 1, S0114: 1, T0049: 1, S0116: 1, H0661: 1, H0458: 1, S0420: 1, S0376: 1, S0444: 1, H0437: 1, S6022: 1, H0550: 1, H0362: 1, H0642: 1, H0574: 1, H0559: 1, S0280: 1, H0590: 1, H0004: 1, H0363: 1, H0263: 1, H0596: 1, H0081: 1, H0014: 1, H0688: 1, H0628: 1,				

HPDWN65	HPDWN65R	1944	1 - 246	4119		L0055: 1, H0673: 1, H0068: 1, H0551: 1, T0069: 1, L0435: 1, H0625: 1, S0002: 1, L0369: 1, L0637: 1, L0764: 1, L0774: 1, L0775: 1, L0375: 1, L0378: 1, L0806: 1, L0805: 1, L0655: 1, L0606: 1, L0657: 1, L0783: 1, L0382: 1, L0792: 1, H0701: 1, S0374: 1, H0519: 1, S0126: 1, H0658: 1, H0670: 1, H0648: 1, S0390: 1, S0037: 1, L0744: 1, L0747: 1, L0779: 1, L0731: 1, L0759: 1, H0445: 1, S0434: 1, L0584: 1, H0667: 1, S0194: 1, H0542: 1, H0543: 1, H0422: 1 and S0424: 1.		
HPDWN69	HPDWN69R	1945	2 - 607	4120	Gly-2 to Pro-9, Ser-24 to Thr-33.			
HPDWO08	HPDWO08R	1946	351 - 704	4121		L0766: 5, H0551: 3, L0769: 3, L0639: 3, H0327: 2, S0002: 2, L0764: 2, L0659: 2,		

					L0663: 2, L0777: 2, S0356: 1, S0360: 1, S0410: 1, L0717: 1, H0261: 1, H0550: 1, S0222: 1, T0109: 1, H0575: 1, T0048: 1, H0052: 1, S0051: 1, L0455: 1, H0124: 1, H0135: 1, H0063: 1, H0087: 1, L0763: 1, L0770: 1, L0796: 1, L0761: 1, L0643: 1, L0374: 1, L0771: 1, L0626: 1, L0635: 1, L0542: 1, L0809: 1, L0665: 1, L0565: 1, H0547: 1, H0658: 1, H0522: 1, L0756: 1, L0758: 1 and L0366: 1.		
HPDWO29	HPDWO29R	1947	386 - 568	4122	His-1 to Gly-13.			
HPDWO50	HPDWO50R	1948	27 - 455	4123	Arg-90 to Lys-95, Pro-121 to Trp-129.			
HPDWO61	HPDWO61R	1949	2 - 358	4124				
HPDWO82	HPDWO82R	1950	1 - 342	4125	Ala-3 to Glu-8.	L0770: 12, H0657: 10, H0659: 9, L0776: 8, H0648: 8, L0755: 8, L0774: 7, S0410: 6, H0494: 6, L0769: 6, L0750: 6, S0408: 5, S0440: 5, L0775: 5,		

		S0376: 4, S0360: 4, L0748: 4, L0777: 4, L0752: 4, L0759: 4, H0341: 3, S0358: 3, H0616: 3, L0766: 3, L0740: 3, L0747: 3, L0731: 3, L0758: 3, S0026: 3, H0170: 2, H0556: 2, H0685: 2, H0656: 2, S0420: 2, S0444: 2, T0109: 2, H0156: 2, H0545: 2, L0471: 2, H0031: 2, H0040: 2, H0560: 2, L0065: 2, S0438: 2, L0763: 2, L0772: 2, L0764: 2, L0518: 2, L0783: 2, H0144: 2, S0374: 2, H0520: 2, H0658: 2, H0670: 2, L0753: 2, H0445: 2, S0434: 2, H0665: 2, S0194: 2, S0134: 1, S0116: 1, H0663: 1, L0481: 1, H0638: 1, H0125: 1, S0442: 1, H0351: 1, H0369: 1, H0550: 1, H0431: 1, H0331: 1, H0069: 1, S0346: 1, T0048: 1,				

							S0182: 1, S0049: 1, H0563: 1, H0081: 1, H0620: 1, H0014: 1, H0373: 1, H0083: 1, H0375: 1, H0428: 1, H0708: 1, H0634: 1, H0412: 1, H0413: 1, L0475: 1, H0386: 1, L0598: 1, H0529: 1, L0520: 1, L0762: 1, L0371: 1, L0638: 1, L0373: 1, L0646: 1, L0773: 1, L0521: 1, L0662: 1, L0805: 1, L0655: 1, L0517: 1, L0540: 1, L0542: 1, L0526: 1, L0809: 1, L0545: 1, L0791: 1, L0663: 1, L0665: 1, H0691: 1, H0547: 1, H0690: 1, H0435: 1, H0660: 1, H0651: 1, S0380: 1, S0406: 1, L0749: 1, L0780: 1, H0668: 1, H0653: 1, S0242: 1, S0276: 1, H0542: 1, H0422: 1 and H0506: 1.		
HPDWS61	HPDWS61R	1951	73 - 321	4126	Asp-15 to Val-20.	H0617: 8, S0404: 8, H0484: 7, H0550: 7,		

		L0758: 5, H0606: 4, H0658: 4, H0696: 4, S0276: 4, H0295: 3, S0280: 3, H0150: 3, H0188: 3, H0163: 3, L0769: 3, S0408: 2, L0622: 2, L0623: 2, T0060: 2, T0006: 2, H0181: 2, H0673: 2, H0494: 2, L0764: 2, L0775: 2, L0776: 2, L0514: 2, L0510: 2, L0511: 2, L0512: 2, L0540: 2, L0783: 2, L0809: 2, L0528: 2, H0683: 2, H0694: 2, L0744: 2, L0747: 2, S0031: 2, S6024: 1, H0294: 1, H0381: 1, H0483: 1, H0664: 1, H0662: 1, S0356: 1, S0442: 1, S0358: 1, S0376: 1, H0411: 1, S6022: 1, H0586: 1, H0333: 1, H0036: 1, H0590: 1, H0309: 1, H0044: 1, H0121: 1, H0081: 1, H0014: 1, S0388: 1, S0051: 1, H0252: 1, H0622: 1,				

						L0483: 1, H0033: 1, H0111: 1, H0032: 1, H0166: 1, S0438: 1, L0762: 1, L0504: 1, L0381: 1, L0803: 1, L0375: 1, L0376: 1, L0509: 1, L0515: 1, L0518: 1, L0782: 1, L0544: 1, L0541: 1, L0543: 1, H0693: 1, S0126: 1, H0651: 1, L0743: 1, L0751: 1, L0777: 1, L0753: 1, H0445: 1, H0667: 1, S0194: 1 and S0398: 1.		
HPDWT55	HPDWT55R	1952	3 - 503	4127	Ala-37 to Ser-42, Gly-127 to Thr-134.	L0774: 3, H0658: 3, L0803: 2, L0439: 2, H0619: 1, H0586:-1, H0309: 1, S0366: 1, L0659: 1 and S0052: 1.		
HPDWT56	HPDWT56R	1953	12 - 746	4128	Arg-4 to Gly-17, Pro-39 to Lys-46, His-96 to Arg-102.			
HPDWU47	HPDWU47R	1954	1 - 705	4129				
HPDWU55	HPDWU55R	1955	1 - 702	4130	Leu-4 to Phe-9, Gly-29 to Glu-39.	L0748: 18, L0755: 7, H0251: 6, L0777: 6, H0658: 4, L0754: 4, L0779: 4, S0360: 3, S0276: 3, H0674: 2, L0767: 2, L0766: 2,		

					L0775: 2, L0809: 2, H0689: 2, L0757: 2, S0358: 1, S0046: 1, H0013: 1, H0427: 1, H0546: 1, H0046: 1, H0123: 1, H0252: 1, H0031: 1, H0617: 1, L0769: 1, L0773: 1, L0662: 1, L0649: 1, L0774: 1, L0375: 1, L0776: 1, L0636: 1, L0783: 1, L0382: 1, L0666: 1, L0663: 1, L0665: 1, H0144: 1, H0670: 1, S0328: 1, H0696: 1, S0027: 1, L0758: 1, L0759: 1 and S0434: 1.	
HPDWU60	HPDWU60R	1956	2 - 568	4131	Pro-50 to Trp-55.	L0766: 7, L0748: 6, L0771: 5, S0422: 3, H0519: 3, L0749: 3, L0756: 3, H0735: 2, H0641: 2, H0529: 2, L0659: 2, S0374: 2, L0758: 2, H0484: 1, S0442: 1, S0358: 1, S0410: 1, S0007: 1, H0632: 1, L0483: 1, H0606: 1, H0268: 1, S0150: 1, L0763: 1,	

					L0637: 1, L0764: 1, L0768: 1, L0774: 1, L0653: 1, L0809: 1, L0666: 1, H0144: 1, L0438: 1, H0520: 1, H0547: 1, H0658: 1, S0328: 1, H0539: 1, S0406: 1, S0027: 1, L0744: 1, L0751: 1, L0754: 1, L0750: 1, L0777: 1, L0592: 1, L0608: 1, L0593: 1, H0543: 1 and H0422: 1.		
HPDWU63	HPDWU63R	1957	2 - 370	4132	Ala-51 to Tyr-56, Ala-92 to Ser-101, Ser-118 to Ile-123.			
HPFMP90	HPFMP90R	1958	38 - 163	4133	Asp-14 to Ala-19.	L0740: 3, L0758: 3, S0242: 3, L0598: 2, L0766: 2, L0803: 2, H0435: 2, H0648: 2, L0748: 2, L0756: 2, L0731: 2, L0757: 2, H0170: 1, S0300: 1, H0431: 1, H0046: 1, H0687: 1, S0003: 1, H0674: 1, H0616: 1, T0067: 1, UNKWN: 1, L0770: 1, L0637: 1, L0373: 1, L0765: 1, L0794: 1, L0804: 1,		

HPIAL09	HPIAL09R	1959	209 - 394	4134	Phe-5 to Leu-11, Ser-20 to Arg-45.	L0775: 1, L0784: 1, L0805: 1, L0776: 1, L0666: 1, L0664: 1, L0665: 1, L0438: 1, H0689: 1, L0439: 1, L0754: 1, L0750: 1, L0759: 1 and L0480: 1.		
HSAMY44	HSAMY44R	1960	3 - 182	4135	Gly-4 to Asn-9.			
HSAYW59	HSAYW59R	1961	2 - 364	4136	Pro-11 to Lys-16, Val-18 to Arg-45, Asn-56 to Glu-67.	H0255: 2, S0114: 1, L0510: 1 and S0216: 1.		
HSCPJ17	HSCPJ17R	1962	2 - 655	4137				
HSDIA22	HSDIA22R	1963	114 - 212	4138				
HSDII65	HSDII65R	1964	239 - 412	4139		L0809: 5, L0666: 4, L0747: 3, L0750: 3, L0764: 2, L0803: 2, L0774: 2, L0651: 2, L0663: 2, L0664: 2, L0748: 2, L0756: 2, L0779: 2, L0755: 2, H0669: 1, H0392: 1, H0600: 1, S0346: 1, H0494: 1, H0646: 1, L0763: 1, L0371: 1, L0372: 1, L0775: 1, L0659: 1, L0518: 1, L0788: 1, L0665: 1, S0330: 1, S0392: 1,		

							L0749: 1, L0752: 1, L0757: 1, S0260: 1, L0596: 1, L0591: 1 and L0608: 1.		
HSDIX73	HSDIX73R	1965	2 - 187	4140					
HSDJI25	HSDJI25R	1966	2 - 169	4141	Ser-20 to Ser-31.				
HSDZE12	HSDZE12R	1967	40 - 141	4142	Trp-1 to Ala-10.		AR033: 4, AR089: 3, AR096: 3, AR060: 3, AR061: 2, AR053: 2, AR055: 1, AR039: 0, AR052: 0 L0774: 3, L0752: 3, L0592: 3, H0625: 2, L0662: 2, L0747: 2, L0777: 2, H0580: 1, L0717: 1, H0455: 1, S0280: 1, H0251: 1, H0633: 1, L0773: 1, L0768: 1, L0794: 1, L0803: 1, L0775: 1, L0653: 1, L0776: 1, L0661: 1, L0659: 1, L0526: 1, L0809: 1, L0665: 1, H0658: 1, H0696: 1, L0755: 1, L0731: 1, L0757: 1, L0759: 1 and H0352: 1.		
HSDZJ21	HSDZJ21R	1968	40 - 180	4143	Lys-18 to Lys-30.				
HSIFF84	HSIFF84R	1969	3 - 80	4144	Pro-14 to Lys-26.				
HSKJR50	HSKJR50R	1970	2 - 400	4145	Leu-117 to Trp-123.				

HSLHT27	HSLHT27R	1971	2 - 196	4146	Asn-45 to Ser-54.			
HSODB16	HSODB16R	1972	1 - 174	4147		H0596: 5, S0388: 4, H0598: 4, H0595: 4, S0412: 4, S0282: 3, S0280: 2, H0594: 2, H0366: 2, H0542: 2, H0395: 1, H0589: 1, S0356: 1, H0411: 1, H0592: 1, H0559: 1, H0427: 1, S0050: 1, H0373: 1, S0344: 1, H0436: 1, S0260: 1, S0194: 1 and H0506: 1.		
HSPSB24	HSPSB24R	1973	1 - 612	4148	Glu-77 to Arg-82, Pro-132 to Met-139.			
HSPSB70	HSPSB70R	1974	3 - 539	4149	Ile-1 to Ala-11, Asp-67 to Leu-78, Asn-81 to Ser-90, Pro-96 to Glu-110, Ala-164 to Ala-171, Gln-173 to Lys-179.			
HSPSB74	HSPSB74R	1975	1 - 162	4150	Ala-1 to Cys-21, Trp-23 to Ser-33.			
HSPSB80	HSPSB80R	1976	2 - 631	4151				
HSPSC30	HSPSC30R	1977	1 - 342	4152	Leu-43 to Thr-58.			
HSPSE86	HSPSE86R	1978	3 - 293	4153	Ser-41 to Ile-50, Gln-55 to Glu-65, Cys-69 to Asp-78.	L0755: 5, L0748: 4, H0616: 3, L0769: 3, L0752: 3, L0731: 3, L0757: 3, S0356: 2, S0408: 2, S0046: 2,		

		L0770: 2, L0771: 2, L0776: 2, L0526: 2, L0747: 2, L0750: 2, L0756: 2, L0758: 2, L0759: 2, L0588: 2, H0170: 1, L0459: 1, H0484: 1, S0358: 1, S0360: 1, H0637: 1, S0045: 1, S0132: 1, H0393: 1, S0278: 1, T0039: 1, H0427: 1, H0318: 1, S0049: 1, H0009: 1, H0081: 1, T0003: 1, H0051: 1, H0083: 1, S0003: 1, H0622: 1, H0708: 1, H0316: 1, H0038: 1, H0063: 1, H0412: 1, S0038: 1, S0150: 1, H0529: 1, L0762: 1, L0763: 1, L0646: 1, L0644: 1, L0768: 1, L0766: 1, L0774: 1, L0775: 1, L0661: 1, L0657: 1, L0782: 1, L0788: 1, L0666: 1, L0665: 1, H0683: 1, H0660: 1, S0378: 1, S0406: 1, L0777: 1, H0445: 1 and H0542: 1.			

HSPSG03	HSPSG03R	1979	3 - 191	4154	Leu-41 to Asp-48.	H0124: 19, H0052: 10, L0751: 7, L0747: 7, H0255: 6, H0441: 6, H0556: 5, S0222: 5, H0265: 4, S0360: 4, H0620: 4, L0655: 4, H0144: 4, L0439: 4, L0596: 4, L0601: 4, S0132: 3, H0575: 3, H0123: 3, H0012: 3, H0024: 3, H0617: 3, H0087: 3, H0529: 3, L0764: 3, L0662: 3, L0766: 3, L0663: 3, L0565: 3, L0438: 3, H0660: 3, L0743: 3, L0740: 3, H0445: 3, H0218: 2, H0585: 2, S0418: 2, S0444: 2, S0408: 2, H0208: 2, S0278: 2, H0261: 2, H0333: 2, H0706: 2, H0581: 2, S0049: 2, H0009: 2, L0471: 2, S0051: 2, T0010: 2, H0083: 2, H0594: 2, T0006: 2, H0628: 2, H0038: 2, S0440: 2, S0142: 2, S0344: 2, L5565: 2, L5566: 2,		

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		S6028: 1, H0271: 1, H0687: 1, S0022: 1, H0252: 1, H0615: 1, H0039: 1, H0033: 1, H0604: 1, H0424: 1, H0213: 1, L0055: 1, H0674: 1, H0068: 1, H0135: 1, H0040: 1, H0551: 1, H0412: 1, H0059: 1, H0100: 1, L0351: 1, L0435: 1, H0494: 1, S0306: 1, S0150: 1, H0647: 1, S0210: 1, S0002: 1, L0369: 1, L0762: 1, L0640: 1, L0371: 1, L0770: 1, L0769: 1, L0638: 1, L0637: 1, L5575: 1, L0772: 1, L0646: 1, L0641: 1, L0374: 1, L0648: 1, L0767: 1, L0768: 1, L0774: 1, L0653: 1, L0493: 1, L0559: 1, L0635: 1, L0783: 1, L0519: 1, L0545: 1, L0541: 1, L0543: 1, L0788: 1, L4559: 1, S0053: 1, L0352: 1, H0520: 1, H0547: 1,				

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HSPSG13	HSPSG13R	1980	2 - 784	4155				
HSPSG42	HSPSG42R	1981	3 - 596	4156	Glu-6 to Thr-11, His-31 to Asn-36, Thr-68 to Ile-76, Met-80 to Arg-89, Glu-123 to Gln-132, Arg-140 to Leu-147.			
HSPSG50	HSPSG50R	1982	123 - 608	4157	Glu-1 to Ile-6.			
HSPSG89	HSPSG89R	1983	94 - 651	4158	Pro-36 to Lys-44, Ile-46 to Ser-52, Val-82 to Gln-89, Gly-99 to Ala-104, Tyr-165 to Leu-171.			
HSPSH39	HSPSH39R	1984	11 - 793	4159				
HSPSH41	HSPSH41R	1985	3 - 431	4160				
HSPSH49	HSPSH49R	1986	3 - 539	4161				
HSPSI65	HSPSI65R	1987	3 - 734	4162	Asp-7 to Lys-15, His-142 to Glu-156,			

HSPSJ71	HSPSJ71R	1988	2 - 310	4163	Glu-181 to Phe-190.	H0124: 19, H0052: 10, L0751: 7, L0747: 7, H0255: 6, H0441: 6, H0556: 5, S0222: 5, H0265: 4, S0360: 4, H0620: 4, L0655: 4, H0144: 4, L0439: 4, L0596: 4, L0601: 4, S0132: 3, H0575: 3, H0123: 3, H0012: 3, H0024: 3, H0617: 3, H0087: 3, H0529: 3, L0764: 3, L0662: 3, L0766: 3, L0663: 3, L0565: 3, L0438: 3, H0660: 3, L0743: 3, L0740: 3, H0445: 3, H0218: 2, H0585: 2, S0418: 2, S0444: 2, S0408: 2, H0208: 2, S0278: 2, H0261: 2, H0333: 2, H0706: 2, H0581: 2, S0049: 2, H0009: 2, L0471: 2, S0051: 2, T0010: 2, H0083: 2, H0594: 2, T0006: 2, H0628: 2, H0038: 2, S0440: 2, S0142: 2, S0344: 2,		

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			4164				
		1 - 444					
		1989					
	HSPSJ72R						
HSPSJ72							

		H0435: 3, S0328: 3, H0445: 3, S0434: 3, L0581: 3, L0361: 3, H0585: 2, H0717: 2, T0049: 2, H0730: 2, S0476: 2, S0278: 2, H0550: 2, H0586: 2, H0559: 2, H0486: 2, H0575: 2, H0253: 2, H0581: 2, H0622: 2, H0606: 2, H0625: 2, H0649: 2, L0667: 2, L0382: 2, H0684: 2, L0743: 2, L0751: 2, L0599: 2, S0026: 2, H0543: 2, S0424: 2, H0171: 1, H0556: 1, S0040: 1, H0740: 1, H0650: 1, H0254: 1, H0255: 1, H0661: 1, H0663: 1, H0664: 1, H0125: 1, S0356: 1, S0442: 1, S0354: 1, S0358: 1, S0408: 1, H0722: 1, S0132: 1, S6026: 1, H0587: 1, L0623: 1, H0250: 1, L0021: 1, H0599: 1, T0082: 1, H0318: 1, H0327: 1, H0530: 1,				

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						H0542: 1, H0422: 1, S0456: 1 and H0352: 1.		
HSPSQ22	HSPSQ22R	1990	1 - 339	4165	Pro-6 to Gly-13, Pro-23 to Lys-32, Lys-94 to Ala-112.			
HSPSQ57	HSPSQ57R	1991	1 - 327	4166	Glu-17 to Asp-32.			
HSPSY67	HSPSY67R	1992	2 - 442	4167		H0683: 242, S0358: 3, L0745: 3, H0656: 2, H0484: 2, S0354: 2, H0370: 2, H0427: 2, T0010: 2, H0039: 2, H0521: 2, S0001: 1, H0619: 1, H0592: 1, H0042: 1, H0618: 1, H0327: 1, H0024: 1, H0266: 1, H0288: 1, H0135: 1, H0551: 1, H0623: 1, H0130: 1, S0210: 1, L0774: 1, L0654: 1, L0438: 1, H0593: 1, H0539: 1, L0439: 1, H0707: 1, H0422: 1 and H0293: 1.		
HSPSZ69	HSPSZ69R	1993	2 - 406	4168				
HSPTA57	HSPTA57R	1994	244 - 438	4169				
HSPTN57	HSPTN57R	1995	2 - 61	4170	Ala-1 to Lys-9, Val-11 to Trp-17.			
HSSDM17	HSSDM17R	1996	46 - 210	4171				
HSWBF04	HSWBF04R	1997	36 - 302	4172	Ser-1 to Thr-8,			

					Glu-17 to Ala-32, Arg-39 to Trp-47.			
HSWBP42	HSWBP42R	1998	188 - 364	4173	Met-9 to Arg-14, Leu-23 to Lys-29, Lys-50 to Asn-56.			
HSXEM65	HSXEM65R	1999	84 - 308	4174	Ser-7 to Gly-12, Pro-23 to Pro-40, Ala-49 to Val-54.	L0803: 10, L0794: 4, L0779: 4, L0789: 2, H0648: 2, S0442: 1, S0045: 1, S0036: 1, L0520: 1, L0763: 1, L0769: 1, L0800: 1, L0644: 1, L0764: 1, L0773: 1, L0767: 1, L0804: 1, L0774: 1, L0805: 1, L0517: 1, H0659: 1, L0777: 1 and L0758: 1.		
HTGAR42	HTGAR42R	2000	136 - 297	4175	Ser-4 to Thr-10, Leu-42 to Pro-51.	H0615: 2 and S0134: 1.		
HTLCU84	HTLCU84R	2001	131 - 406	4176	Asp-55 to Val-63, Cys-80 to Arg-92.			
HTSHG06	HTSHG06R	2002	107 - 295	4177				
HTTDP76	HTTDP76R	2003	169 - 423	4178	Pro-8 to Trp-14, Arg-20 to Ser-27, Glu-52 to Glu-60.			
HUFCQ37	HUFCQ37R	2004	94 - 366	4179	Pro-26 to Gly-39, Pro-68 to Arg-75.	L0439: 15, H0052: 11, S0007: 9, L0438: 6, L0731: 6, L0779: 5, L0754: 4, H0550: 3, L0769: 3, S0126: 3,		

		L0743: 3, H0194: 2, H0687: 2, H0623: 2, L0768: 2, L0776: 2, L0659: 2, L0666: 2, L0663: 2, H0689: 2, S0330: 2, L0748: 2, L0786: 2, L0777: 2, L0752: 2, L0758: 2, L0608: 2, H0352: 2, H0662: 1, S0356: 1, S0354: 1, S0444: 1, S0045: 1, S0476: 1, H0441: 1, H0431: 1, H0333: 1, H0642: 1, H0575: 1, H0590: 1, T0048: 1, H0150: 1, H0024: 1, S0050: 1, S0388: 1, H0252: 1, H0039: 1, H0135: 1, H0038: 1, H0264: 1, H0494: 1, L0770: 1, L0372: 1, L0646: 1, L0521: 1, L0794: 1, L0803: 1, L0775: 1, L0653: 1, L0657: 1, L0809: 1, L0792: 1, L0664: 1, H0144: 1, L0352: 1, H0519: 1, H0593: 1, H0658: 1, H0672: 1, H0539: 1,			

						S0406: 1, L0751: 1, L0749: 1, L0756: 1, L0753: 1 and H0506: 1.		
HULAP70	HULAP70R	2005	2 - 349	4180	Arg-8 to Arg-28.			
HUSGA11	HUSGA11R	2006	19 - 390	4181	Arg-11 to Arg-18, Ser-42 to Arg-52, Met-62 to Pro-73, Pro-102 to Gly-115.			
HUSIL88	HUSIL88R	2007	187 - 288	4182				
HUUCH08	HUUCH08RA	2008	351 - 620	4183				
HUVFA39	HUVFA39R	2009	1 - 462	4184	Arg-2 to Gly-12, Arg-28 to Gly-41, Gly-48 to Val-68, Lys-94 to Arg-118.			
HVCAA31	HVCAA31R	2010	94 - 618	4185	Met-4 to Thr-22, Asp-45 to Gly-50, Gly-65 to Asp-70, Lys-96 to Asp-104, Ile-121 to Leu-126, Met-133 to Glu-144, Ala-149 to Asn-156.			
HVCAA37	HVCAA37R	2011	208 - 717	4186	Ile-36 to Glu-41, Glu-55 to Lys-63, Lys-68 to Gln-81, Pro-84 to Lys-90, Pro-108 to Ser-119.			
HVCAA68	HVCAA68R	2012	2 - 373	4187	Pro-22 to Pro-28, Glu-109 to Arg-118.			

HVCAA94	HVCAA94R	2013	1 - 462	4188				
HVCAB02	HVCAB02R	2014	2 - 649	4189		H0666: 696, H0660: 11, L0666: 7, H0617: 4, L0664: 4, H0549: 3, H0620: 3, H0181: 3, H0593: 3, H0684: 3, H0484: 2, H0619: 2, H0051: 2, H0606: 2, H0670: 2, L0748: 2, L0439: 2, S0040: 1, H0483: 1, H0255: 1, H0662: 1, S0007: 1, H0486: 1, H0052: 1, H0597: 1, H0046: 1, H0009: 1, H0012: 1, H0059: 1, T0041: 1, H0517: 1, L0770: 1, L0764: 1, L0803: 1, L0783: 1, L0809: 1, H0435: 1, H0658: 1, H0539: 1, H0521: 1, H0696: 1 and S0434: 1.		
HVCAB03	HVCAB03R	2015	353 - 664	4190	Arg-1 to Gln-18, Asp-52 to Leu-57, Asp-67 to Lys-74, Asp-85 to Ala-92.			
HVCAB18	HVCAB18R	2016	3 - 758	4191				
HVCAB44	HVCAB44R	2017	3 - 224	4192		L0769: 7, L0747: 7, L0777: 7, L0752: 7, L0665: 6, L0770: 5,		

		L0766: 5, L0779: 5, L0771: 4, L0666: 4, L0439: 4, L0751: 4, H0052: 3, H0135: 3, L0762: 3, L0775: 3, L0806: 3, L0809: 3, L0647: 3, S0404: 3, L0743: 3, L0749: 3, L0731: 3, S0360: 2, H0083: 2, H0412: 2, L0761: 2, L0764: 2, L0662: 2, L0653: 2, L0783: 2, L0532: 2, L0664: 2, L0748: 2, L0750: 2, L0758: 2, L0759: 2, H0543: 2, H0265: 1, S0218: 1, H0657: 1, H0254: 1, H0661: 1, H0402: 1, S0354: 1, S0046: 1, H0619: 1, S6026: 1, L0717: 1, H0409: 1, H0587: 1, H0486: 1, H0013: 1, H0069: 1, H0156: 1, H0599: 1, L0022: 1, H0575: 1, H0597: 1, H0544: 1, H0546: 1, H0150: 1, H0057: 1, H0014: 1, S0003: 1, H0252: 1,				

					H0615: 1, H0030: 1, H0644: 1, H0617: 1, S0364: 1, H0316: 1, H0598: 1, S0036: 1, H0063: 1, H0646: 1, S0426: 1, L0369: 1, L0772: 1, L0773: 1, L0767: 1, L0774: 1, L0375: 1, L0378: 1, L0655: 1, L0656: 1, L0790: 1, L0663: 1, H0520: 1, H0689: 1, H0670: 1, H0660: 1, H0666: 1, S0152: 1, H0521: 1, H0436: 1, S0206: 1, L0744: 1, L0786: 1, L0755: 1, L0587: 1, L0362: 1, H0422: 1, S0456: 1 and L0600: 1.		
HVCAB52	HVCAB52R	2018	4 - 612	4193				
HVCAB57	HVCAB57R	2019	1 - 357	4194				
HVCAB88	HVCAB88R	2020	83 - 739	4195	Lys-6 to Thr-11, Gly-22 to Phe-30, Leu-40 to Gly-53, Arg-56 to Lys-64, Lys-93 to Leu-101, Met-176 to Leu-181.			
HVCAC42	HVCAC42R	2021	319 - 417	4196	Arg-7 to Asp-13.			
HVCAD52	HVCAD52R	2022	1 - 369	4197				

HVCAE01	HVCAE01R	2023	49 - 663	4198	Tyr-44 to Asp-49, Pro-132 to Leu-139, Cys-168 to His-174.			
HVCAE15	HVCAE15R	2024	3 - 605	4199	Pro-49 to Val-58, Gln-60 to Gln-78, Arg-85 to His-99, Phe-122 to Asp-128, Arg-157 to Arg-163, Leu-178 to Thr-193.			
HVCAE22	HVCAE22R	2025	2 - 493	4200	Gly-19 to Ala-24, Asn-32 to Val-38.	S0358: 7, H0659: 7, H0542: 7, H0543: 6, L0666: 5, L0747: 5, S0418: 4, H0494: 4, L0657: 4, L0517: 4, S0374: 4, L0731: 4, L0596: 4, H0341: 3, H0385: 3, S0346: 3, H0553: 3, S0144: 3, S0210: 3, L0764: 3, L0659: 3, L0663: 3, L0664: 3, H0521: 3, L0754: 3, L0779: 3, L0752: 3, L0755: 3, H0445: 3, H0422: 3, T0049: 2, S0116: 2, S0212: 2, S0282: 2, S0376: 2, S0360: 2, S0045: 2, H0486: 2, H0250: 2, H0427: 2, H0581: 2, H0251: 2,		

		H0545: 2, H0083: 2, H0510: 2, H0412: 2, S0422: 2, L0769: 2, L0637: 2, L0646: 2, L0651: 2, H0144: 2, H0519: 2, H0660: 2, S0380: 2, L0740: 2, L0608: 2, L0603: 2, H0668: 2, H0667: 2, S0412: 2, H0265: 1, T0002: 1, S0402: 1, S6024: 1, H0657: 1, H0656: 1, H0663: 1, H0638: 1, H0580: 1, H0208: 1, S0046: 1, L0717: 1, S0278: 1, H0370: 1, H0586: 1, H0497: 1, H0574: 1, T0109: 1, H0156: 1, H0575: 1, H0590: 1, H0318: 1, S0049: 1, H0544: 1, H0572: 1, H0123: 1, L0471: 1, H0024: 1, H0373: 1, L0163: 1, S0388: 1, H0355: 1, H0375: 1, S6028: 1, H0267: 1, H0687: 1, S0312: 1, S0250: 1, S0003: 1, H0316: 1, H0598: 1,			

					H0163: 1, H0551: 1, H0623: 1, H0059: 1, T0042: 1, H0625: 1, H0561: 1, H0509: 1, S0150: 1, H0633: 1, H0646: 1, S0426: 1, L0598: 1, H0529: 1, H0517: 1, L0761: 1, L0521: 1, L0662: 1, L0766: 1, L0775: 1, L0653: 1, L0655: 1, L0783: 1, L0382: 1, L0809: 1, L0519: 1, L0529: 1, L0792: 1, L0665: 1, H0547: 1, H0593: 1, S0126: 1, H0689: 1, H0435: 1, H0666: 1, S0328: 1, H0518: 1, H0522: 1, H0436: 1, S0037: 1, S0027: 1, S0032: 1, L0439: 1, L0756: 1, S0031: 1, L0588: 1, L0595: 1, S0026: 1 and H0136: 1.		
HVCAE56	HVCAE56R	2026	75 - 572	4201	Asn-20 to Gln-27.			
HVCAG56	HVCAG56R	2027	3 - 551	4202	Arg-92 to Arg-101, Lys-134 to Asn-140, Ser-149 to Thr-159, Gly-166 to Ile-175.			

HVCAG86	HVCAG86R	2028	150 - 509	4203	Arg-6 to Pro-21.			
HVCAH03	HVCAH03R	2029	3 - 689	4204		H0620: 16, L0747: 12, H0599: 11, L0758: 9, S0358: 8, L0751: 7, L0754: 7, L0596: 7, H0556: 6, H0393: 5, H0706: 5, H0052: 5, H0616: 5, H0529: 5, L0774: 5, L0776: 5, H0483: 4, S0442: 4, H0253: 4, H0012: 4, H0083: 4, S0150: 4, L0662: 4, H0670: 4, H0521: 4, L0748: 4, L0581: 4, H0543: 4, H0341: 3, S0376: 3, H0580: 3, S0007: 3, S0280: 3, H0036: 3, H0618: 3, H0581: 3, H0309: 3, H0510: 3, H0428: 3, H0040: 3, H0087: 3, L0764: 3, L0775: 3, L0655: 3, L0666: 3, L0663: 3, L0664: 3, H0547: 3, L0749: 3, L0750: 3, L0595: 3, H0657: 2, H0656: 2, S0116: 2, H0638: 2, S0356: 2, S0360: 2, S0046: 2,		

		H0411: 2, H0550: 2, S6014: 2, H0370: 2, H0574: 2, L0622: 2, L0623: 2, H0042: 2, S0182: 2, H0318: 2, H0085: 2, H0373: 2, H0275: 2, H0188: 2, H0030: 2, H0169: 2, H0124: 2, H0135: 2, H0038: 2, H0100: 2, T0042: 2, H0494: 2, H0625: 2, H0509: 2, H0132: 2, H0130: 2, H0538: 2, L0800: 2, L0768: 2, L0381: 2, L0784: 2, L0378: 2, L0653: 2, L0659: 2, L0809: 2, H0651: 2, H0696: 2, H0134: 2, S3014: 2, S0027: 2, L0743: 2, L0744: 2, L0740: 2, L0731: 2, S0031: 2, L0604: 2, H0423: 2, H0352: 2, H0265: 1, T0002: 1, S0134: 1, H0583: 1, H0484: 1, H0661: 1, L0005: 1, S0408: 1, S0045: 1, H0619: 1, H0645: 1, H0351: 1,				

		H0369: 1, H0549: 1, T0104: 1, H0592: 1, H0587: 1, H0333: 1, H0643: 1, H0331: 1, H0632: 1, H0270: 1, H0101: 1, H0013: 1, H0575: 1, S0010: 1, H0196: 1, H0263: 1, T0115: 1, H0597: 1, H0530: 1, H0545: 1, H0009: 1, H0571: 1, H0081: 1, H0050: 1, H0024: 1, H0095: 1, L0163: 1, H0051: 1, S0388: 1, H0107: 1, H0375: 1, H0266: 1, S0334: 1, H0288: 1, H0286: 1, H0252: 1, H0039: 1, H0424: 1, H0213: 1, H0181: 1, H0673: 1, H0674: 1, S0364: 1, H0708: 1, S0366: 1, S0036: 1, H0591: 1, H0551: 1, H0488: 1, H0412: 1, H0413: 1, H0623: 1, T0041: 1, L0475: 1, H0560: 1, H0561: 1, S0306: 1, H0714: 1, H0641: 1, H0633: 1,			

HVCAH17	HVCAH17R	2030	1 - 498	4205		H0647: 1, S0144: 1, S0142: 1, S0344: 1, H0695: 1, L0369: 1, L0762: 1, L0763: 1, L0371: 1, L0770: 1, L0769: 1, L0638: 1, L0796: 1, L0772: 1, L0373: 1, L0646: 1, L0374: 1, L0771: 1, L0773: 1, L0648: 1, L0766: 1, L0386: 1, L0375: 1, L0806: 1, L0382: 1, L0665: 1, H0144: 1, S0374: 1, H0693: 1, L0438: 1, H0520: 1, H0593: 1, H0689: 1, H0690: 1, H0658: 1, H0666: 1, H0648: 1, H0672: 1, H0539: 1, H0522: 1, H0555: 1, S0028: 1, S0032: 1, L0752: 1, L0755: 1, H0445: 1, S0434: 1, L0599: 1, S0011: 1, H0667: 1, H0136: 1, S0192: 1, H0542: 1, S0424: 1, H0506: 1 and H0008: 1.		
HVCAH56	HVCAH56R	2031	3 - 527	4206					

HVCAI08	HVCAI08R	2032	67 - 453	4207	Pro-6 to Arg-13, Met-34 to Asp-41, Lys-65 to Thr-74.	L0748: 28, L0754: 27, L0740: 15, H0056: 13, L0750: 13, S0007: 12, L0757: 12, S0126: 11, S0222: 10, L0731: 10, S0360: 9, H0144: 9, S0358: 8, H0009: 8, L0005: 7, S0010: 7, H0266: 7, L0742: 7, L0752: 7, H0547: 6, S0408: 5, S0046: 5, L0471: 5, S0003: 5, S0028: 5, L0758: 5, L0362: 5, S0026: 5, H0294: 4, H0341: 4, H0638: 4, S0045: 4, H0327: 4, H0039: 4, H0031: 4, H0413: 4, S0210: 4, L0769: 4, L0662: 4, L0775: 4, L0776: 4, L0809: 4, H0689: 4, S3014: 4, S0206: 4, L0747: 4, H0445: 4, L0608: 4, H0661: 3,.S0376: 3, S0278: 3, H0369: 3, H0441: 3, H0575: 3, S0049: 3, S0388: 3, S0036: 3, H0616: 3, H0100: 3, H0494: 3,		

		S0440: 3, L0520: 3, L0764: 3, S0374: 3, H0682: 3, H0659: 3, H0672: 3, S0027: 3, L0439: 3, S0192: 3, H0624: 2, H0170: 2, T0002: 2, H0716: 2, S0282: 2, H0305: 2, S0420: 2, L0103: 2, H0592: 2, H0586: 2, T0039: 2, T0109: 2, H0013: 2, S0346: 2, T0048: 2, H0318: 2, S0474: 2, H0251: 2, H0597: 2, H0150: 2, H0178: 2, H0569: 2, H0081: 2, H0024: 2, S0051: 2, H0615: 2, H0428: 2, H0644: 2, H0708: 2, H0090: 2, H0412: 2, H0059: 2, H0633: 2, S0142: 2, S0422: 2, L0772: 2, L0646: 2, L0768: 2, L0806: 2, L0782: 2, H0684: 2, S0328: 2, S0378: 2, S0380: 2, H0522: 2, H0134: 2, S0406: 2, S3012: 2, L0751: 2, L0755: 2,		

		S0031: 2, L0605: 2, L0592: 2, L0601: 2, L0600: 2, L0615: 1, H0265: 1, S0040: 1, S0342: 1, T0049: 1, S0134: 1, H0650: 1, H0657: 1, S0116: 1, H0663: 1, H0177: 1, H0125: 1, H0192: 1, S0348: 1, S0356: 1, S0442: 1, S0354: 1, S0444: 1, S0410: 1, T0008: 1, H0580: 1, H0208: 1, S0132: 1, S6026: 1, S0300: 1, H0549: 1, H0431: 1, H0370: 1, H0438: 1, H0574: 1, H0250: 1, H0427: 1, H0097: 1, T0082: 1, H0421: 1, L2250: 1, H0309: 1, T0110: 1, H0544: 1, H0086: 1, H0563: 1, H0014: 1, H0051: 1, H0021: 1, H0083: 1, H0594: 1, S6028: 1, H0687: 1, H0290: 1, H0286: 1, S0214: 1, H0622: 1, T0023: 1, H0111: 1, H0628: 1,		

		H0617: 1, L0055: 1, H0166: 1, H0135: 1, H0163: 1, H0591: 1, H0038: 1, S0112: 1, L0564: 1, T0041: 1, T0042: 1, S0014: 1, S0438: 1, H0509: 1, H0641: 1, H0529: 1, L0762: 1, L4747: 1, L0372: 1, L0553: 1, L0771: 1, L0773: 1, L0521: 1, L0767: 1, L0766: 1, L5569: 1, L5574: 1, L0381: 1, L0650: 1, L0774: 1, L0376: 1, L0653: 1, L0527: 1, L0657: 1, L0518: 1, L0783: 1, L0545: 1, L0532: 1, L0666: 1, L0663: 1, S0216: 1, H0520: 1, H0593: 1, H0711: 1, H0690: 1, H0670: 1, H0660: 1, H0666: 1, H0539: 1, S0152: 1, S0332: 1, H0521: 1, H0704: 1, S0044: 1, S0146: 1, S0404: 1, L0749: 1, S0260: 1, H0444: 1, S0434: 1,				

						L0596: 1, L0588: 1, L0599: 1, L0366: 1, S0011: 1, H0668: 1, H0216: 1, S0242: 1, S0196: 1, H0542: 1, H0543: 1, L0697: 1, L0698: 1, S0398: 1, S0424: 1, S3020: 1 and S0460: 1.		
HVCAI24	HVCAI24R	2033	108 - 365	4208	Asn-1 to Lys-6.			
HVCAI79	HVCAI79R	2034	2 - 508	4209				
HVCAJ27	HVCAJ27R	2035	1 - 537	4210		S0408: 5, L0809: 5, L0800: 4, L0804: 4, H0647: 3, L0803: 3, L0775: 3, L0805: 3, S0126: 3, L0751: 3, S0360: 2, S0278: 2, H0409: 2, H0424: 2, H0617: 2, H0494: 2, L0783: 2, H0670: 2, L0747: 2, L0777: 2, L0731: 2, L0601: 2, H0556: 1, H0295: 1, S0116: 1, H0341: 1, S0442: 1, S0358: 1, S0376: 1, H0370: 1, H0042: 1, H0575: 1, S0049: 1, H0150: 1, H0163: 1, S0294: 1, S0438: 1, H0633: 1,		

HVCAJ81	HVCAJ81R	2036	1 - 477	4211	Lys-61 to Gln-73, Gln-81 to Ser-97.	H0529: 1, L0769: 1, L0374: 1, L0764: 1, L0560: 1, L0774: 1, L0376: 1, L0629: 1, L0807: 1, L0657: 1, L0659: 1, L0791: 1, L0666: 1, H0682: 1, H0683: 1, H0658: 1, H0666: 1, S0328: 1, H0539: 1, H0555: 1, H0436: 1, S3012: 1, L0779: 1, L0752: 1, L0757: 1, L0758: 1, L0759: 1, H0667: 1 and H0423: 1.		
HVCAJ95	HVCAJ95R	2037	1 - 210	4212	Arg-14 to Gly-41, Arg-47 to Glu-53, Gln-56 to Lys-70.			
HVCAK02	HVCAK02R	2038	3 - 467	4213	Glu-1 to Lys-9.			
HVCAL06	HVCAL06R	2039	3 - 383	4214				
HVCAO17	HVCAO17R	2040	1 - 516	4215		H0009: 3, H0135: 3, H0494: 3, H0265: 2, H0341: 2, H0484: 2, S0046: 2, S0222: 2, H0266: 2, S0144: 2, H0658: 2, L0742: 2, H0542: 2, H0423: 2, H0171: 1, T0002: 1,		

						H0685: 1, S0040: 1, H0295: 1, S0420: 1, S0356: 1, S0360: 1, H0392: 1, H0586: 1, T0109: 1, H0427: 1, H0599: 1, H0618: 1, H0318: 1, H0597: 1, H0544: 1, H0012: 1, H0024: 1, H0014: 1, S0022: 1, H0428: 1, H0535: 1, H0068: 1, H0090: 1, H0040: 1, H0063: 1, H0264: 1, H0413: 1, T0042: 1, H0560: 1, H0633: 1, S0142: 1, S0422: 1, H0529: 1, H0519: 1, S0126: 1, H0684: 1, H0666: 1, H0672: 1, H0134: 1, H0214: 1, H0631: 1, S0027: 1, S0028: 1, L0753: 1, L0757: 1, L0599: 1, L0608: 1, L0594: 1, S0026: 1, H0667: 1, H0136: 1, S0276: 1 and H0543: 1.			
HVCAO63	HVCAO63R	2041	10 - 306	4216	Pro-56 to Thr-65.				
HVCAP89	HVCAP89R	2042	3 - 407	4217					
HVCAQ53	HVCAQ53R	2043	28 - 480	4218	Val-105 to Ile-113,				

					Asp-128 to Phe-137, Arg-145 to Arg-151.			
HVCAQ84	HVCAQ84R	2044	193 - 402	4219	Asp-15 to Thr-23.			
HVCAR87	HVCAR87R	2045	3 - 455	4220				
HVCAS08	HVCAS08R	2046	2 - 715	4221				
HVCAS52	HVCAS52R	2047	1 - 687	4222		L0777: 12, H0341: 6, S0440: 6, S0126: 6, S0358: 5, H0250: 5, H0428: 5, H0031: 5, H0090: 5, L0747: 5, L0731: 5, H0542: 5, S0422: 4, H0547: 4, L0748: 4, L0749: 4, L0759: 4, H0624: 3, H0580: 3, H0486: 3, S0003: 3, S0214: 3, H0494: 3, L0770: 3, L0764: 3, L0758: 3, L0599: 3, S0026: 3, H0543: 3, H0170: 2, H0657: 2, H0656: 2, S0420: 2, S0442: 2, S0444: 2, S0010: 2, H0318: 2, H0581: 2, H0046: 2, H0014: 2, H0083: 2, L0483: 2, H0040: 2, H0551: 2, L0769: 2, L0773: 2, L0766: 2, L0774: 2, L0659: 2, H0144: 2,		

		L0565: 2, H0659: 2, H0666: 2, H0648: 2, S0328: 2, H0525: 2, H0696: 2, H0134: 2, S0406: 2, L0756: 2, L0752: 2, L0757: 2, S0436: 2, L0595: 2, S0384: 2, H0506: 2, H0171: 1, S0040: 1, T0049: 1, H0661: 1, H0638: 1, S0418: 1, S0354: 1, S0360: 1, S0410: 1, S0007: 1, S0300: 1, S0278: 1, S6014: 1, H0431: 1, H0587: 1, H0333: 1, H0574: 1, H0270: 1, T0040: 1, L0586: 1, H0635: 1, H0156: 1, T0082: 1, H0706: 1, S0346: 1, H0421: 1, H0052: 1, H0597: 1, H0545: 1, H0242: 1, L0471: 1, H0373: 1, S0051: 1, H0375: 1, H0594: 1, H0687: 1, H0288: 1, H0328: 1, H0553: 1, L0143: 1, H0032: 1, H0598: 1, H0634: 1, H0616: 1,				

					H0413: 1, H0100: 1, T0042: 1, H0560: 1, H0625: 1, H0561: 1, S0150: 1, H0633: 1, H0652: 1, L0763: 1, L0371: 1, L0638: 1, L0667: 1, L0648: 1, L0521: 1, L0662: 1, L0649: 1, L0803: 1, L0776: 1, L0783: 1, L0383: 1, L0647: 1, L0664: 1, L0665: 1, H0520: 1, H0689: 1, H0414: 1, H0658: 1, H0670: 1, H0660: 1, H0710: 1, S0152: 1, S0332: 1, S0454: 1, H0522: 1, H0704: 1, H0214: 1, S3012: 1, S3014: 1, S0027: 1, S0028: 1, S0206: 1, L0740: 1, L0750: 1, S0434: 1, L0581: 1, H0653: 1, H0667: 1, S0242: 1, S0194: 1, H0422: 1 and S0424: 1.	
HVCAS57	HVCAS57R	2048	114 - 257	4223		L0748: 6, L0439: 6, L0731: 6, H0663: 4, S0354: 4, H0038: 3, S0150: 3, L0666: 3,	

		S0404: 3, L0758: 3, S0212: 2, H0497: 2, H0551: 2, H0412: 2, H0561: 2, S0210: 2, L0521: 2, L0526: 2, H0506: 2, H0661: 1, S0418: 1, S0420: 1, S0358: 1, S0408: 1, H0619: 1, H0431: 1, H0486: 1, T0040: 1, T0060: 1, H0013: 1, L0021: 1, H0590: 1, H0581: 1, H0052: 1, H0263: 1, H0373: 1, H0266: 1, S0312: 1, S0314: 1, S0022: 1, H0622: 1, H0553: 1, H0708: 1, H0413: 1, H0560: 1, L0640: 1, L0646: 1, L0764: 1, L0649: 1, L0389: 1, L0804: 1, L0659: 1, L0543: 1, L0789: 1, L0664: 1, H0697: 1, S0374: 1, H0520: 1, H0435: 1, H0659: 1, H0666: 1, S0152: 1, S0406: 1, H0436: 1, S0027: 1, L0742: 1, L0753: 1, L0595: 1,				

						H0668: 1, S0276: 1 and H0422: 1.		
HVCAU64	HVCAU64R	2049	3 - 404	4224	Arg-7 to Val-15.			
HVCBD18	HVCBD18R	2050	190 - 309	4225	Val-3 to Lys-9, Leu-32 to Gln-40.			
HVCBE76	HVCBE76R	2051	3 - 431	4226				
HVCBE79	HVCBE79R	2052	3 - 524	4227				
HVCBF38	HVCBF38R	2053	3 - 251	4228				
HVCBF89	HVCBF89R	2054	2 - 361	4229		AR039: 419, AR096: 339, AR053: 225, AR052: 212, AR104: 168, AR089: 168, AR060: 114, AR033: 108, AR055: 99, AR061: 74		
HVCBG01	HVCBG01R	2055	22 - 318	4230	Lys-7 to Thr-13, Asp-24 to Thr-30, Gly-39 to Glu-52.			
HVCBQ31	HVCBQ31R	2056	2 - 448	4231				
HVCCA08	HVCCA08R	2057	2 - 298	4232				
HVCCK34	HVCCK34R	2058	34 - 699	4233				
HVCCR91	HVCCR91R	2059	1 - 156	4234				
HVCCV93	HVCCV93R	2060	203 - 469	4235	Ser-25 to Asn-31, Asp-38 to Val-48, Ser-57 to Gly-63.			
HVCDA75	HVCDA75R	2061	1 - 315	4236				
HVCDD19	HVCDD19R	2062	31 - 459	4237	Pro-1 to Ser-7, Val-22 to Asn-29,			

HVCDF50	HVCDF50R	2063	3 - 353	4238	Pro-45 to Pro-51, Arg-59 to Val-64, Val-92 to Lys-98.			
HVCDH77	HVCDH77R	2064	2 - 679	4239	Ser-56 to Phe-69, Arg-113 to Thr-123, Leu-128 to Ser-135, Lys-148 to Ala-156, Gly-166 to Ser-171, Glu-188 to Leu-194, Ala-211 to Gly-222.	H0666: 8, S0144: 6, L0747: 5, H0545: 4, L0769: 4, L0766: 4, L0731: 4, H0341: 3, L0764: 3, L0794: 3, L0750: 3, L0755: 3, L0758: 3, S0045: 2, H0257: 2, H0581: 2, H0546: 2, H0135: 2, L0803: 2, L0657: 2, L0789: 2, L0666: 2, S0044: 2, H0445: 2, L0588: 2, L0594: 2, L0601: 2, H0543: 2, S0040: 1, H0295: 1, H0583: 1, S0116: 1, S0212: 1, H0661: 1, H0664: 1, S0418: 1, S0356: 1, S0358: 1, S0360: 1, S0007: 1, S0046: 1, S0132: 1, S0278: 1, H0592: 1, H0586: 1, H0559: 1, H0575: 1, S0182: 1, H0620: 1, S0388: 1, H0083: 1, S0312: 1,		

					H0617: 1, H0169: 1, H0708: 1, H0163: 1, H0551: 1, H0488: 1, T0069: 1, H0102: 1, H0100: 1, H0494: 1, L0475: 1, H0646: 1, S0142: 1, S0002: 1, L0762: 1, L0796: 1, L0646: 1, L0800: 1, L0645: 1, L0771: 1, L0662: 1, L0768: 1, L0386: 1, L0651: 1, L0783: 1, L0790: 1, L0791: 1, L0663: 1, H0144: 1, L0438: 1, H0519: 1, H0134: 1, S3014: 1, L0740: 1, L0779: 1, L0757: 1, S0031: 1, L0592: 1, H0665: 1, S0276: 1 and H0422: 1.		
HVVAB25	HVVAB25R	2065	3 - 155	4240				
HVVAB37	HVVAB37R	2066	74 - 619	4241				
HVVAC18	HVVAC18R	2067	56 - 238	4242				
HVVAD74	HVVAD74R	2068	403 - 570	4243			L0766: 12, S0412: 8, S0422: 4, L0756: 4, H0341: 3, H0638: 3, L0770: 3, L0666: 3, L0777: 3, S0360: 2, H0318: 2, H0327: 2,	

		L0803: 2, H0670: 2, L0740: 2, L0731: 2, S0260: 2, S0436: 2, H0170: 1, H0125: 1, S0418: 1, S0444: 1, H0489: 1, H0580: 1, H0734: 1, S0222: 1, H0587: 1, H0497: 1, H0013: 1, H0075: 1, H0427: 1, H0046: 1, H0354: 1, L0142: 1, L0055: 1, H0090: 1, H0412: 1, S0440: 1, H0647: 1, H0529: 1, L0369: 1, L0371: 1, L0772: 1, L0646: 1, L0771: 1, L0649: 1, L0381: 1, L0650: 1, L0774: 1, L0653: 1, L0655: 1, L0606: 1, L0790: 1, L0532: 1, L0663: 1, L0664: 1, S0374: 1, H0593: 1, H0711: 1, H0659: 1, H0658: 1, H0672: 1, H0521: 1, L0779: 1, L0755: 1, L0758: 1, L0759: 1, L0593: 1, S0242: 1, H0423: 1 and H0721: 1.			

HVVAE73	HVVAE73R	2069	96 - 347	4244	Glu-21 to Ile-26.				
HVVAE88	HVVAE88R	2070	157 - 381	4245	Ser-1 to Asp-9, Lys-26 to Gln-36.	H0672: 2, L0748: 2, H0156: 1 and H0494: 1.			
HVVAH91	HVVAH91R	2071	3 - 245	4246		L0747: 5, L0731: 4, L0742: 3, L0745: 3, L0769: 2, L0766: 2, L0774: 2, L0597: 2, L0604: 2, T0049: 1, S0358: 1, H0549: 1, H0486: 1, T0040: 1, S0280: 1, H0318: 1, H0263: 1, H0551: 1, H0633: 1, H0529: 1, L0640: 1, L0763: 1, L0771: 1, L0768: 1, L0388: 1, L0657: 1, L0659: 1, L0517: 1, L0666: 1, L0663: 1, H0648: 1, H0672: 1, H0521: 1, L0749: 1, L0750: 1, L0779: 1, L0780: 1 and L0592: 1.			
HVVAI03	HVVAI03R	2072	2 - 307	4247					
HVVAJ23	HVVAJ23R	2073	3 - 527	4248	Gln-33 to Ala-38, Thr-47 to Asn-64, Pro-117 to Leu-122, Thr-160 to Gly-171.				
HVVAJ28	HVVAJ28R	2074	1 - 327	4249	His-1 to Trp-6, Gly-28 to Asp-34, Arg-41 to Ala-53,				

HVVAJ47	HVVAJ47R	2075	159 - 443	4250	Arg-69 to Thr-76, Leu-97 to Glu-103.	L0659: 55, H0644: 23, L0748: 18, L0666: 17, L0747: 17, H0622: 16, S0194: 16, H0553: 15, L0662: 15, S0126: 15, L0740: 15, L0754: 14, H0031: 13, H0593: 12, L0649: 11, H0435: 11, L0757: 11, H0124: 10, S0250: 9, S0356: 8, H0672: 7, L0362: 7, L0779: 6, S0210: 5, L0771: 5, L0663: 5, L0664: 5, H0547: 5, L0750: 5, L0601: 5, S0360: 4, H0619: 4, L0764: 4, L0804: 4, L0775: 4, S0358: 3, H0486: 3, H0628: 3, H0264: 3, L0451: 3, L0776: 3, L0655: 3, L0783: 3, H0693: 3, H0660: 3, S0454: 3, L0749: 3, L0605: 3, S0192: 3, H0170: 2, H0294: 2, S0180: 2, H0586: 2, H0013: 2, H0687: 2, H0428: 2,		

		L0483: 2, H0488: 2, S0450: 2, H0647: 2, S0208: 2, L0648: 2, L0523: 2, L0809: 2, L0665: 2, H0144: 2, L0565: 2, H0690: 2, H0518: 2, H0696: 2, S3012: 2, L0752: 2, L0755: 2, L0731: 2, H0665: 2, H0171: 1, H0656: 1, S0212: 1, S0376: 1, S0410: 1, S0132: 1, H0393: 1, L0717: 1, H0392: 1, H0331: 1, H0485: 1, T0040: 1, T0060: 1, L0021: 1, H0599: 1, T0082: 1, H0618: 1, H0052: 1, H0085: 1, T0110: 1, H0046: 1, H0050: 1, L0471: 1, H0355: 1, S0003: 1, H0615: 1, H0039: 1, L0143: 1, H0111: 1, L0455: 1, S0366: 1, H0135: 1, H0040: 1, H0551: 1, H0100: 1, L0564: 1, H0509: 1, H0517: 1, L0763: 1, L0769: 1, L0772: 1,			

HVVAK42	HVVAK42R	2076	121 - 312	4251		L0646: 1, L0768: 1, L0375: 1, L0784: 1, L0806: 1, L0805: 1, L0653: 1, L0654: 1, L0517: 1, L0384: 1, L0383: 1, L0647: 1, L0789: 1, L0791: 1, L0438: 1, H0520: 1, H0689: 1, H0682: 1, H0684: 1, S0152: 1, H0704: 1, H0555: 1, S0432: 1, S3014: 1, S0027: 1, S0028: 1, L0744: 1, L0758: 1, H0595: 1, H0707: 1, S0436: 1, L0591: 1, L0599: 1, S0196: 1, H0422: 1, S0384: 1 and L0600: 1.			
HVVAK46	HVVAK46R	2077	3 - 782	4252	Lys-1 to Lys-14, Phe-21 to Trp-26, Val-87 to Cys-92, Thr-139 to Gln-153, Gln-156 to Lys-162, Glu-171 to Leu-177.				
HVVAK68	HVVAK68R	2078	372 - 584	4253		L0747: 22, L0599: 11, L0766: 9, L0748: 9, L0483: 8, L0740: 7, L0665: 5, L0754: 5,			

		L0764: 4, L0775: 4, L0362: 4, H0695: 3, L0663: 3, H0144: 3, L0755: 3, H0170: 2, L0717: 2, H0437: 2, H0036: 2, H0251: 2, H0545: 2, L0471: 2, H0266: 2, H0553: 2, H0413: 2, L0763: 2, L0772: 2, L0655: 2, L0543: 2, L0666: 2, H0547: 2, S0406: 2, L0745: 2, L0749: 2, L0731: 2, L0757: 2, L0758: 2, H0445: 2, L0596: 2, L0591: 2, L0581: 2, L0608: 2, S0192: 2, H0624: 1, S0134: 1, H0650: 1, S0116: 1, H0663: 1, S0356: 1, S0444: 1, H0580: 1, S0300: 1, H0441: 1, H0442: 1, H0586: 1, H0587: 1, H0333: 1, H0643: 1, H0632: 1, H0486: 1, H0013: 1, H0118: 1, H0042: 1, H0004: 1, T0048: 1, H0318: 1, H0421: 1, H0041: 1,				

						H0014: 1, S0051: 1, H0071: 1, H0083: 1, H0687: 1, S0003: 1, S0214: 1, H0688: 1, H0031: 1, H0163: 1, H0038: 1, H0040: 1, H0616: 1, H0063: 1, H0059: 1, T0069: 1, L0475: 1, S0015: 1, H0633: 1, H0538: 1, L0769: 1, L0796: 1, L0637: 1, L0373: 1, L0521: 1, L0375: 1, L0806: 1, L0661: 1, L0527: 1, L0656: 1, L0809: 1, L0647: 1, L0664: 1, H0519: 1, H0682: 1, H0435: 1, H0659: 1, H0670: 1, H0672: 1, S0330: 1, H0521: 1, H0696: 1, H0134: 1, H0214: 1, H0555: 1, L0746: 1, L0750: 1, L0752: 1, L0759: 1, H0343: 1, L0589: 1, L0590: 1, S0194: 1, H0543: 1, S0452: 1 and H0506: 1.		
HVVAK85	HVVAK85R	2079	2 - 373	4254					
HVVAL81	HVVAL81R	2080	97 - 408	4255	Gly-72 to Asp-81.	AR089: 67, AR104: 8,			

						AR096: 5, AR060: 4, AR055: 4, AR061: 3 H0169: 21, H0674: 19, L0754: 19, H0309: 15, T0060: 7, H0038: 7, H0509: 7, S0044: 7, S0358: 6, H0124: 6, H0163: 6, H0672: 6, L0731: 6, L0750: 5, L0603: 5, H0032: 4, H0616: 4, S0330: 4, L0749: 4, L0755: 4, H0597: 3, S0318: 3, H0622: 3, L0540: 3, S0328: 3, S0406: 3, L0758: 3, S0444: 2, H0486: 2, H0122: 2, H0355: 2, S0316: 2, L0770: 2, L0646: 2, L0771: 2, L0662: 2, L0364: 2, L0803: 2, L0783: 2, H0696: 2, L0743: 2, L0747: 2, L0581: 2, H0506: 2, S0356: 1, S0376: 1, H0675: 1, H0643: 1, H0706: 1, H0253: 1, H0085: 1, H0204: 1, H0510: 1, S0314: 1, H0553: 1, H0673: 1,

HVVAP65	HVVAP65RP00B	2081	124 - 354	4256	Arg-1 to Cys-10, Asn-29 to Phe-38.	S0366: 1, H0380: 1, T0004: 1, S0438: 1, L0372: 1, L0773: 1, L0767: 1, L0806: 1, L0542: 1, L0809: 1, L0519: 1, L0529: 1, H0691: 1, S0148: 1, H0660: 1, S0004: 1, S0146: 1, L0780: 1, S0194: 1 and S0276: 1.		
HVVAS27	HVVAS27RP00B	2082	3 - 413	4257				
HVVAW26	HVVAW26R	2083	1 - 324	4258	Lys-62 to Tyr-73.			
HVVBD91	HVVBD91RP00B	2084	2 - 436	4259				
HVVBF09	HVVBF09R	2085	3 - 236	4260	Leu-36 to Ser-43, Gly-68 to Phe-73.			
HVVBF66	HVVBF66R	2086	7 - 171	4261	Lys-17 to Tyr-22.	H0672: 2, S0007: 1, L0717: 1, H0545: 1, L0764: 1, L0649: 1, L0659: 1, L0809: 1, L0438: 1, H0555: 1, L0748: 1, L0754: 1 and L0752: 1.		
HVVBH88	HVVBH88R	2087	1 - 189	4262		L0659: 14, L0740: 11, H0052: 8, L0662: 8, L0666: 8, H0059: 7, H0265: 6, H0040: 6,		

		L0596: 6, S0356: 5, S0358: 5, H0539: 5, L0751: 5, L0750: 5, H0431: 4, L0759: 4, H0442: 3, H0575: 3, H0051: 3, T0010: 3, H0428: 3, H0031: 3, H0135: 3, H0433: 3, H0412: 3, H0509: 3, L0637: 3, L0372: 3, L0521: 3, L0806: 3, L0519: 3, L0663: 3, L0664: 3, L0665: 3, S0378: 3, L0591: 3, L0593: 3, H0483: 2, S0360: 2, H0587: 2, H0013: 2, H0036: 2, S0010: 2, S0049: 2, H0194: 2, T0110: 2, H0046: 2, H0123: 2, H0024: 2, H0083: 2, H0179: 2, T0006: 2, H0038: 2, H0538: 2, S0002: 2, L0769: 2, L0796: 2, L0646: 2, L0374: 2, L0648: 2, L0776: 2, H0520: 2, H0519: 2, H0689: 2, H0555: 2, S0028: 2, L0439: 2, L0752: 2,				

		L0755: 2, L0366: 2, H0542: 2, H0556: 1, S0040: 1, S0114: 1, T0049: 1, S0212: 1, H0638: 1, H0125: 1, S0420: 1, S0354: 1, S0376: 1, H0675: 1, H0489: 1, S0468: 1, S0132: 1, S0005: 1, H0492: 1, T0109: 1, S0346: 1, H0505: 1, H0318: 1, H0581: 1, H0196: 1, H0309: 1, H0263: 1, H0545: 1, H0050: 1, L0471: 1, H0012: 1, H0620: 1, H0014: 1, S0051: 1, H0510: 1, H0266: 1, H0188: 1, S0214: 1, H0252: 1, H0039: 1, H0622: 1, H0424: 1, H0030: 1, H0553: 1, H0644: 1, H0316: 1, S0036: 1, H0634: 1, H0087: 1, H0551: 1, L0564: 1, T0041: 1, T0042: 1, L0475: 1, H0130: 1, S0144: 1, S0142: 1, S0344: 1, S0210: 1, L0638: 1,				

					L0761: 1, L0803: 1, L0653: 1, L0661: 1, L0527: 1, L0636: 1, L0783: 1, L0809: 1, T0068: 1, L0438: 1, S0126: 1, H0690: 1, H0682: 1, H0435: 1, H0658: 1, H0670: 1, H0660: 1, H0672: 1, H0651: 1, S0380: 1, H0522: 1, S0044: 1, H0478: 1, H0479: 1, S0027: 1, L0742: 1, L0748: 1, L0747: 1, L0756: 1, L0757: 1, L0758: 1, H0444: 1, H0445: 1, L0597: 1, L0581: 1, L0603: 1, S0011: 1, S0194: 1, S0196: 1, S0042: 1, L0697: 1 and H0506: 1.		
HVVBI16	HVVBI16R	2088	2 - 592	4263				
HVVBJ08	HVVBJ08R	2089	150 - 578	4264	Gln-5 to Pro-13, Pro-25 to Lys-32, Asp-62 to Ser-72, Gln-78 to Ser-85, Pro-91 to Glu-105.			
HVVBJ55	HVVBJ55RP 00B	2090	3 - 413	4265				
HVVBK13	HVVBK13R	2091	1 - 633	4266				

HVVBO65	HVVBO65R	2092	3 - 644	4267	Pro-62 to Pro-73, Thr-80 to Ser-92, Gln-108 to Tyr-116.			
HVVBO88	HVVBO88R	2093	50 - 433	4268				
HVVBR70	HVVBR70RP00B	2094	2 - 406	4269				
HVVBT33	HVVBT33R	2095	116 - 316	4270	Asn-15 to Leu-27, Lys-48 to Val-53.			
HVVBT60	HVVBT60R	2096	454 - 2	4271				
HVVBY87	HVVBY87R	2097	3 - 161	4272				
HVVCB04	HVVCB04R	2098	2 - 580	4273	Pro-1 to Phe-9, Ser-111 to Asn-117, Ser-159 to Pro-167.			
HVVCB08	HVVCB08R	2099	1 - 792	4274	Ser-56 to Tyr-62, Gln-67 to Pro-74, Thr-83 to Gly-94, Gln-120 to Gln-130, Pro-150 to Ser-157.			
HVVCC06	HVVCC06R	2100	299 - 427	4275				
HVVCD65	HVVCD65R	2101	224 - 481	4276	Lys-40 to Gly-47.			
HVVCD81	HVVCD81R	2102	2 - 640	4277				
HVVCD87	HVVCD87R	2103	447 - 695	4278				L0439: 23, L0438: 20, H0556: 10, L0665: 10, S0358: 9, L0731: 8, H0423: 8, H0069: 7, H0622: 7, L0666: 7, L0748: 7, L0747: 7, H0486: 6, H0090: 6, L0664: 6, H0519: 6,

		H0539: 6, L0749: 6, L0596: 6, S0222: 5, H0457: 5, H0435: 5, L0756: 5, L0758: 5, L0601: 5, H0013: 4, H0046: 4, H0150: 4, H0266: 4, H0038: 4, L0771: 4, L0662: 4, L0659: 4, L0663: 4, H0670: 4, H0672: 4, H0521: 4, S0404: 4, L0745: 4, H0265: 3, S0114: 3, H0650: 3, H0662: 3, S0360: 3, S0045: 3, H0333: 3, H0156: 3, H0318: 3, H0050: 3, H0620: 3, T0010: 3, H0375: 3, H0428: 3, H0039: 3, H0591: 3, H0040: 3, H0063: 3, H0412: 3, H0100: 3, H0529: 3, L0770: 3, L0775: 3, L0809: 3, H0547: 3, S0126: 3, H0436: 3, L0741: 3, L0752: 3, S0026: 3, H0624: 2, H0713: 2, H0583: 2, S0116: 2, H0663: 2, H0305: 2, H0638: 2,				

		S0418: 2, S0442: 2, H0580: 2, S0007: 2, H0619: 2, L0717: 2, H0261: 2, H0392: 2, H0586: 2, H0587: 2, H0635: 2, H0271: 2, H0687: 2, H0553: 2, L0456: 2, H0616: 2, H0413: 2, H0560: 2, L0764: 2, L0773: 2, L0521: 2, L0774: 2, L0378: 2, L0806: 2, L0493: 2, L0517: 2, L0647: 2, H0690: 2, H0659: 2, H0658: 2, L0740: 2, L0757: 2, L0588: 2, H0542: 2, H0422: 2, L0600: 2, H0171: 1, S0218: 1, H0657: 1, H0656: 1, H0341: 1, S0298: 1, S0212: 1, S0110: 1, S0001: 1, S0030: 1, H0661: 1, S0420: 1, S0356: 1, S0376: 1, S0444: 1, S0046: 1, S0476: 1, H0550: 1, H0441: 1, H0438: 1, H0492: 1, H0485: 1, H0427: 1, S0280: 1,				

		S0010: 1, S0665: 1, H0581: 1, S0049: 1, H0052: 1, H0251: 1, H0309: 1, H0263: 1, H0597: 1, H0041: 1, H0563: 1, H0081: 1, H0012: 1, H0023: 1, H0051: 1, S0051: 1, H0356: 1, H0267: 1, H0179: 1, S0250: 1, H0252: 1, H0615: 1, T0023: 1, T0006: 1, H0031: 1, H0644: 1, L0055: 1, H0673: 1, S0364: 1, L0455: 1, H0068: 1, H0400: 1, S0036: 1, H0087: 1, H0551: 1, H0102: 1, T0041: 1, H0625: 1, H0641: 1, S0344: 1, S0002: 1, S0426: 1, L0369: 1, L0769: 1, L5575: 1, L0772: 1, L0373: 1, L0372: 1, L0363: 1, L0767: 1, L0649: 1, L0560: 1, L0650: 1, L0375: 1, L0661: 1, L0807: 1, L0384: 1, L0519: 1, L0792: 1, S0428: 1,			

HVVCD90	HVVCD90R	2104	47 - 754	4279		H0144: 1, L0352: 1, H0520: 1, H0682: 1, H0660: 1, H0651: 1, H0710: 1, H0518: 1, S0152: 1, H0579: 1, H0696: 1, S0146: 1, H0576: 1, H0631: 1, S3012: 1, S0037: 1, S0028: 1, L0751: 1, L0754: 1, L0779: 1, L0777: 1, L0780: 1, L0753: 1, L0759: 1, S0031: 1, H0445: 1, L0687: 1, L0599: 1, L0608: 1, L0595: 1, H0136: 1, S0242: 1, S0194: 1, S0276: 1, H0543: 1, S0424: 1 and S0452: 1.		
HVVCE63	HVVCE63R	2105	338 - 778	4280				
HVVCE65	HVVCE65R	2106	2 - 214	4281				
HVVCF38	HVVCF38R	2107	3 - 497	4282				
HVVCG29	HVVCG29R	2108	1 - 441	4283		H0135: 2, S0046: 1, S0222: 1, H0052: 1, H0672: 1, S0328: 1 and H0214: 1.		
HVVCG31	HVVCG31R	2109	2 - 415	4284				
HVVCG46	HVVCG46R	2110	3 - 350	4285	Gly-16 to Lys-22, Trp-82 to Lys-87.			

HVVCG93	HVVCG93R	2111	1 - 405	4286	Arg-48 to Asn-57, Lys-77 to Glu-83, Phe-106 to Asp-112.	AR089: 107, AR096: 52, AR104: 30, AR060: 27, AR061: 14, AR055: 13		
HVVCH28	HVVCH28R	2112	3 - 350	4287	Glu-81 to Gly-91, Arg-107 to Asn-116.			
HVVCI28	HVVCI28R	2113	3 - 119	4288	Asp-10 to Lys-15, Lys-29 to Asp-34.			
HVVCI50	HVVCI50R	2114	44 - 460	4289				
HVVCI85	HVVCI85R	2115	3 - 647	4290	Asp-1 to Thr-14, Ala-76 to Thr-88, Asp-101 to Lys-115, Ala-128 to Gln-136, Pro-141 to Gln-151.			
HVVCJ51	HVVCJ51R	2116	1 - 351	4291		H0585: 4, H0457: 4, L0809: 4, L0747: 4, S0442: 3, H0492: 3, H0427: 3, H0318: 3, L0666: 3, H0690: 3, H0686: 2, H0662: 2, S0358: 2, S0408: 2, H0150: 2, H0135: 2, H0063: 2, H0494: 2, L0761: 2, L0764: 2, L0773: 2, L0662: 2, L0378: 2, L0665: 2, H0670: 2, S0406: 2, L0744: 2, L0749: 2, L0601: 2, H0170: 1,		

		H0685: 1, H0661: 1, H0402: 1, S0348: 1, S0354: 1, S0376: 1, S0360: 1, S0278: 1, H0586: 1, H0333: 1, H0642: 1, L0622: 1, S0280: 1, H0599: 1, H0253: 1, H0231: 1, H0545: 1, H0373: 1, H0266: 1, H0553: 1, S0036: 1, H0551: 1, H0116: 1, H0264: 1, H0059: 1, S0352: 1, S0440: 1, H0646: 1, L0640: 1, L0639: 1, L0630: 1, L0772: 1, L0373: 1, L0646: 1, L0800: 1, L0641: 1, L0374: 1, L0644: 1, L0645: 1, L0794: 1, L0766: 1, L0774: 1, L0775: 1, L0659: 1, L0793: 1, L0532: 1, L0664: 1, H0520: 1, H0672: 1, S0380: 1, H0696: 1, H0478: 1, H0345: 1, L0439: 1, L0750: 1, L0759: 1, H0343: 1, H0595: 1 and H0422: 1.				

HVVCK59	HVVCK59R	2117	1 - 147	4292		L0751: 3, L0757: 3, L0662: 2, H0686: 1, H0266: 1, L0055: 1, L0763: 1, L0764: 1, L0768: 1, L0805: 1, L0653: 1, L0666: 1, H0690: 1, H0672: 1, L0777: 1, L0758: 1 and S0276: 1.		
HVVCK78	HVVCK78R	2118	3 - 320	4293				
HVVCL52	HVVCL52R	2119	1 - 339	4294	Pro-11 to Lys-31, Ser-36 to Gln-44, Thr-53 to Gly-58, Ala-74 to Arg-87, Pro-105 to His-113.			
HVVCL73	HVVCL73R	2120	2 - 775	4295	Gly-8 to Lys-22, Phe-29 to Trp-34, Val-95 to Cys-100, Thr-147 to Gln-161, Gln-164 to Lys-170, Glu-179 to Leu-185, Pro-194 to Gly-199.			
HVVCM67	HVVCM67R	2121	3 - 293	4296	Trp-36 to Thr-43, Gly-51 to Thr-70, Tyr-87 to Glu-97.			
HVVCM84	HVVCM84R	2122	3 - 347	4297				
HVVCN20	HVVCN20R	2123	35 - 466	4298				
HVVCN29	HVVCN29R	2124	96 - 332	4299		H0521: 182, H0522: 34, S0002: 30, S0278: 27, H0638: 23, S0344:		

13, S0144: 11, S0142: 9, H0580: 8, L0740: 6, L0747: 6, H0445: 6, H0090: 5, L0756: 5, L0777: 5, S0360: 4, H0591: 4, S0426: 4, L0771: 4, L0766: 4, L0776: 4, L0754: 4, S0194: 4, H0341: 3, S0376: 3, H0393: 3, H0575: 3, H0538: 3, H0144: 3, H0716: 2, S0212: 2, H0637: 2, H0331: 2, H0632: 2, H0486: 2, H0590: 2, H0046: 2, H0051: 2, S0440: 2, H0509: 2, L0783: 2, L0663: 2, H0555: 2, L0748: 2, L0439: 2, L0745: 2, L0758: 2, L0362: 2, H0170: 1, H0685: 1, T0049: 1, H0177: 1, S0442: 1, S0408: 1, S0132: 1, S0476: 1, S0300: 1, S6022: 1, H0392: 1, H0537: 1, H0438: 1, H0587: 1, H0497: 1, H0270: 1, T0060: 1, H0013: 1,					

		H0427: 1, L0021: 1, H0581: 1, H0374: 1, H0597: 1, H0544: 1, H0546: 1, H0569: 1, H0123: 1, L0471: 1, H0012: 1, S0388: 1, H0275: 1, H0375: 1, H0286: 1, S0003: 1, L0194: 1, T0006: 1, H0644: 1, H0032: 1, H0674: 1, H0361: 1, S0036: 1, H0038: 1, H0040: 1, H0551: 1, H0413: 1, L0475: 1, H0561: 1, S0438: 1, H0131: 1, H0641: 1, L0369: 1, L0762: 1, L0637: 1, L0800: 1, L0662: 1, L0649: 1, L0388: 1, L0774: 1, L0775: 1, L0651: 1, L0653: 1, L0809: 1, L0789: 1, L0666: 1, L0665: 1, S0374: 1, S0126: 1, H0435: 1, H0659: 1, H0672: 1, S0378: 1, H0518: 1, S0392: 1, S3014: 1, L0751: 1, L0779: 1, L0780: 1, L0731: 1,			

						L0759: 1, S0260: 1, L0599: 1, S0026: 1, H0423: 1, S0412: 1 and H0506: 1.		
HVVCN54	HVVCN54R	2125	2 - 460	4300				
HVVCN66	HVVCN66R	2126	3 - 212	4301				
HVVCO13	HVVCO13R	2127	2 - 352	4302	Gln-61 to Pro-68, Gln-103 to Ala-108, Tyr-111 to Thr-117.			
HVVCO16	HVVCO16R	2128	170 - 334	4303	Val-28 to Ser-33.			
HVVCO87	HVVCO87R	2129	3 - 404	4304	Lys-54 to Ala-67, Arg-77 to Thr-86.			
HVVCP41	HVVCP41R	2130	2 - 442	4305				
HVVCP88	HVVCP88R	2131	3 - 449	4306	Ala-35 to Ala-41, Pro-46 to Gly-54, Pro-67 to Gly-87.			
HVVCQ05	HVVCQ05R	2132	11 - 184	4307	Ser-23 to Lys-30.			
HVVCQ49	HVVCQ49R	2133	3 - 605	4308	Glu-74 to Arg-79, Glu-117 to Arg-134.			
HVVCQ70	HVVCQ70R	2134	10 - 144	4309	Arg-30 to Phe-36.	H0672: 2 and L0518: 1.		
HVVCQ93	HVVCQ93R	2135	1 - 630	4310				
HVVCS28	HVVCS28R	2136	105 - 335	4311				
HVVCS32	HVVCS32R	2137	35 - 217	4312	Arg-11 to Pro-17, Ser-33 to Lys-46.			
HVVCT54	HVVCT54R	2138	237 - 698	4313	His-1 to Asn-8, Arg-10 to Gly-16, Tyr-50 to Gly-56.	L0659: 55, H0644: 23, L0748: 18, L0666: 17, L0747: 17, H0622: 16, S0194: 16, H0553: 15,		

L0662: 15, S0126: 15, L0740: 15, L0754: 14, H0031: 13, H0593: 12, L0649: 11, H0435: 11, L0757: 11, H0124: 10, S0250: 9, S0356: 8, H0672: 7, L0362: 7, L0779: 6, S0210: 5, L0771: 5, L0663: 5, L0664: 5, H0547: 5, L0750: 5, L0601: 5, S0360: 4, H0619: 4, L0764: 4, L0804: 4, L0775: 4, S0358: 3, H0486: 3, H0628: 3, H0264: 3, L0451: 3, L0776: 3, L0655: 3, L0783: 3, H0693: 3, H0660: 3, S0454: 3, L0749: 3, L0605: 3, S0192: 3, H0170: 2, H0294: 2, S0180: 2, H0586: 2, H0013: 2, H0687: 2, H0428: 2, L0483: 2, H0488: 2, S0450: 2, H0647: 2, S0208: 2, L0648: 2, L0523: 2, L0809: 2, L0665: 2, H0144: 2, L0565: 2, H0690: 2,							

H0518: 2, H0696: 2, S3012: 2, L0752: 2, L0755: 2, L0731: 2, H0665: 2, H0171: 1, H0656: 1, S0212: 1, S0376: 1, S0410: 1, S0132: 1, H0393: 1, L0717: 1, H0392: 1, H0331: 1, H0485: 1, T0040: 1, T0060: 1, L0021: 1, H0599: 1, T0082: 1, H0618: 1, H0052: 1, H0085: 1, T0110: 1, H0046: 1, H0050: 1, L0471: 1, H0355: 1, S0003: 1, H0615: 1, H0039: 1, L0143: 1, H0111: 1, L0455: 1, S0366: 1, H0135: 1, H0040: 1, H0551: 1, H0100: 1, L0564: 1, H0509: 1, H0517: 1, L0763: 1, L0769: 1, L0772: 1, L0646: 1, L0768: 1, L0375: 1, L0784: 1, L0806: 1, L0805: 1, L0653: 1, L0654: 1, L0517: 1, L0384: 1, L0383: 1, L0647: 1,							

					L0789: 1, L0791: 1, L0438: 1, H0520: 1, H0689: 1, H0682: 1, H0684: 1, S0152: 1, H0704: 1, H0555: 1, S0432: 1, S3014: 1, S0027: 1, S0028: 1, L0744: 1, L0758: 1, H0595: 1, H0707: 1, S0436: 1, L0591: 1, L0599: 1, S0196: 1, H0422: 1, S0384: 1 and L0600: 1.		
HVVCT62	HVVCT62R	2139	340 - 522	4314			
HVVCU14	HVVCU14R	2140	365 - 529	4315	Ile-1 to Ser-6, Lys-13 to His-25.	L0748: 18, L0794: 7, L0438: 7, L0777: 7, L0809: 6, L0439: 6, L0756: 6, L0750: 5, L0717: 3, L0770: 3, L0776: 3, L0664: 3, L0747: 3, L0757: 3, S0222: 2, H0013: 2, H0596: 2, H0040: 2, L0769: 2, L0768: 2, L0766: 2, H0672: 2, L0731: 2, L0758: 2, L0591: 2, L0599: 2, H0624: 1, S0342: 1, H0638: 1, S0376: 1, H0549: 1, H0587: 1,	

					H0574: 1, H0635: 1, S0049: 1, H0052: 1, T0010: 1, H0288: 1, H0286: 1, H0553: 1, L0455: 1, L0351: 1, H0538: 1, L0763: 1, L0638: 1, L0775: 1, L0659: 1, L0783: 1, L0789: 1, L0663: 1, L0665: 1, H0690: 1, S0152: 1, L0740: 1, L0753: 1 and S0424: 1.		
HVVCU50	HVVCU50R	2141	23 - 307	4316	Gln-8 to Lys-13, Glu-32 to Arg-56, Ser-60 to Thr-69.	L0747: 16, L0750: 15, L0752: 15, L0769: 9, L0757: 9, L0005: 8, L0775: 8, L0740: 8, L0774: 6, L0471: 5, H0087: 5, L0758: 5, H0656: 4, L0772: 4, L0731: 4, L0588: 4, H0657: 3, H0341: 3, H0638: 3, S0007: 3, S0046: 3, H0599: 3, S0049: 3, H0009: 3, H0412: 3, L0776: 3, L0783: 3, S0374: 3, H0660: 3, H0672: 3, L0749: 3, L0755: 3, H0352: 3, S0222: 2, H0441: 2, H0251: 2,		

		H0309: 2, H0620: 2, H0266: 2, T0067: 2, H0494: 2, L0761: 2, L0651: 2, L0518: 2, S0126: 2, H0670: 2, S0328: 2, H0521: 2, S3012: 2, S0206: 2, L0745: 2, L0753: 2, L0759: 2, L0596: 2, L0608: 2, H0423: 2, H0395: 1, T0002: 1, H0685: 1, S0218: 1, S0116: 1, S0110: 1, H0484: 1, H0661: 1, H0663: 1, H0306: 1, H0402: 1, S0356: 1, S0442: 1, S0358: 1, S0360: 1, H0208: 1, S0045: 1, H0393: 1, H0351: 1, H0392: 1, H0333: 1, H0574: 1, L0623: 1, T0039: 1, T0040: 1, L0586: 1, H0250: 1, H0156: 1, H0575: 1, S0346: 1, H0318: 1, H0581: 1, H0421: 1, H0597: 1, H0546: 1, H0545: 1, H0046: 1, H0041: 1, H0081: 1, H0012: 1,				

		H0023: 1, S0388: 1, H0275: 1, H0356: 1, S0023: 1, H0594: 1, H0188: 1, H0428: 1, H0535: 1, H0674: 1, S0036: 1, H0135: 1, H0063: 1, H0413: 1, H0056: 1, T0004: 1, H0100: 1, T0042: 1, H0334: 1, H0641: 1, H0647: 1, S0144: 1, S0344: 1, L0763: 1, L0371: 1, L0637: 1, L0764: 1, L0768: 1, L0364: 1, L0376: 1, L0524: 1, L0632: 1, L0655: 1, L0659: 1, L0782: 1, L0809: 1, L0666: 1, L0663: 1, H0144: 1, L0565: 1, H0691: 1, H0547: 1, H0593: 1, H0690: 1, H0684: 1, H0579: 1, S0044: 1, H0631: 1, S0028: 1, L0742: 1, L0748: 1, L0746: 1, S0031: 1, S0434: 1, H0667: 1, S0192: 1, S0276: 1, H0542: 1, H0422: 1, H0506: 1 and				

						L0600: 1.			
HVVCV41	HVVCV41R	2142	2 - 310	4317	Glu-1 to Gln-10, Val-74 to Arg-83.				
HVVCV68	HVVCV68R	2143	2 - 244	4318	Pro-12 to Ser-18, Pro-25 to Pro-30, Ala-62 to Ser-70.				
HVVCW75	HVVCW75R	2144	3 - 410	4319	Met-22 to Asp-27, Cys-43 to Trp-50, Asp-79 to Trp-93, Glu-124 to Glu-136.	L0794: 5, H0617: 4, H0486: 3, L0800: 3, L0764: 3, H0672: 3, L0751: 3, S0360: 2, H0188: 2, S0022: 2, L0769: 2, L0803: 2, L0809: 2, L0665: 2, L0361: 2, H0556: 1, H0583: 1, H0657: 1, S0418: 1, L0005: 1, S0354: 1, S0408: 1, S0045: 1, S0046: 1, S6014: 1, H0587: 1, H0333: 1, H0559: 1, H0596: 1, H0673: 1, H0616: 1, H0494: 1, L0761: 1, L0662: 1, L0651: 1, L0659: 1, L0382: 1, L5622: 1, L0663: 1, H0690: 1, H0670: 1, S0152: 1, S0390: 1, L0747: 1, L0777: 1, L0731: 1, L0758: 1, S0436: 1,			

HVVCX17	HVVCX17R	2145	124 - 297	4320	Asp-1 to Pro-10.	L0592: 1, L0601: 1 and S0424: 1.		
						H0052: 15, H0585: 12, L0740: 12, L0439: 11, L0758: 10, L0754: 9, L5286: 8, L0748: 8, H0141: 7, L0666: 7, H0521: 7, L0742: 7, L0749: 7, H0556: 6, S0222: 6, H0494: 6, L0743: 6, L0751: 6, L0757: 6, H0253: 5, T0010: 5, L0803: 5, L0731: 5, H0657: 4, S0360: 4, S0408: 4, S0046: 4, S0278: 4, H0618: 4, S0049: 4, H0617: 4, H0623: 4, S0038: 4, L0764: 4, L0766: 4, L0805: 4, L0809: 4, L0744: 4, L0746: 4, S0040: 3, S0212: 3, L0005: 3, H0441: 3, H0333: 3, H0013: 3, H0599: 3, H0009: 3, H0242: 3, H0644: 3, H0038: 3, H0551: 3, H0412: 3, T0042: 3, L0769: 3, L0804: 3, L0774: 3,		

		L0776: 3, L0792: 3, L0663: 3, L0438: 3, S0044: 3, S0406: 3, S0028: 3, L0745: 3, L0779: 3, L0752: 3, L0362: 3, S6024: 2, H0733: 2, S0132: 2, H0261: 2, H0455: 2, H0438: 2, H0497: 2, H0041: 2, L0471: 2, H0620: 2, H0024: 2, H0051: 2, H0266: 2, H0284: 2, S0250: 2, T0006: 2, S0366: 2, S0036: 2, H0591: 2, S0344: 2, L0369: 2, L5623: 2, L0791: 2, L0665: 2, S0374: 2, H0520: 2, S0126: 2, H0672: 2, H0436: 2, L0741: 2, L0747: 2, L0750: 2, L0756: 2, L0759: 2, S0436: 2, L0591: 2, L0592: 2, L0485: 2, L0608: 2, L0593: 2, L0595: 2, H0667: 2, H0423: 2, L0718: 2, H0149: 1, H0265: 1, H0139: 1, H0716: 1, S0114: 1,				

		T0049: 1, S0218: 1, H0341: 1, S0001: 1, H0484: 1, H0483: 1, H0254: 1, H0255: 1, H0662: 1, H0306: 1, H0638: 1, S0418: 1, S0420: 1, S0356: 1, S0442: 1, S0358: 1, S0444: 1, H0637: 1, S0007: 1, S0045: 1, S0476: 1, H0619: 1, H0393: 1, S6026: 1, L0717: 1, H0370: 1, H0586: 1, H0587: 1, H0574: 1, T0040: 1, H0069: 1, S0280: 1, H0036: 1, S0010: 1, H0390: 1, H0318: 1, H0581: 1, H0234: 1, T0103: 1, H0546: 1, H0545: 1, H0046: 1, N0006: 1, H0569: 1, H0081: 1, H0050: 1, H0047: 1, N0008: 1, S0388: 1, H0107: 1, H0083: 1, H0375: 1, H0188: 1, H0428: 1, H0039: 1, H0424: 1, H0213: 1, L0142: 1, H0181: 1, H0606: 1,			

					H0674: 1, H0135: 1, H0040: 1, H0616: 1, H0087: 1, H0264: 1, H0488: 1, H0268: 1, H0059: 1, H0100: 1, L0351: 1, H0334: 1, H0633: 1, S0142: 1, H0538: 1, S0426: 1, L0640: 1, L0637: 1, L5575: 1, L0800: 1, L0648: 1, L0794: 1, L0655: 1, L0657: 1, L0659: 1, L0542: 1, L0783: 1, L0382: 1, L5622: 1, H0144: 1, H0723: 1, H0519: 1, H0690: 1, H0435: 1, S0330: 1, H0539: 1, S0454: 1, S0404: 1, H0555: 1, S3014: 1, L0780: 1, L0755: 1, H0445: 1, H0595: 1, S0434: 1, L0588: 1, L0605: 1, L0366: 1, H0136: 1, H0542: 1, H0543: 1, H0422: 1, H0506: 1 and H0008: 1.		
HVVCX46	HVVCX46R	2146	35 - 418	4321	Arg-9 to Ile-31, Gln-38 to Lys-43, Gln-87 to Ala-92,			

					Ser-116 to Pro-128.			
HVVCY29	HVVCY29R	2147	2 - 775	4322	Ser-8 to Ser-14, Asn-68 to Tyr-74, His-80 to Val-91, Glu-141 to Phe-147, Ala-159 to Ser-170, Asp-184 to Gly-199.			
HVVCY55	HVVCY55R	2148	2 - 697	4323	Pro-60 to Gly-72, Gln-89 to Ser-94, Pro-121 to Pro-132, Pro-146 to Pro-166.			
HVVCY60	HVVCY60R	2149	1 - 588	4324	Lys-30 to Glu-36, Lys-55 to Tyr-68, Ile-82 to Asp-87, Trp-115 to Ser-125, Pro-139 to Pro-146.			
HVVCY62	HVVCY62R	2150	3 - 620	4325	Ala-17 to Lys-23, Leu-25 to Ala-35, Gln-71 to Ala-76, Tyr-79 to His-85, Pro-112 to Gly-120, Gly-149 to Tyr-165, Lys-175 to His-181.			
HVVCY75	HVVCY75R	2151	139 - 276	4326				
HVVCY77	HVVCY77R	2152	2 - 598	4327	Glu-179 to Ala-184.			
HVVCZ18	HVVCZ18R	2153	423 - 542	4328				
HVVCZ50	HVVCZ50R	2154	139 - 291	4329		H0412: 26, S0360: 11, S0126: 8, H0014: 7, H0628: 6, H0413: 6,		

		S0212: 5, S0045: 5, H0411: 5, H0486: 4, S0003: 4, S0210: 4, H0672: 4, L0731: 4, S0192: 4, S0418: 3, S0046: 3, H0169: 3, L0649: 3, S0040: 2, H0671: 2, H0662: 2, S0358: 2, S0376: 2, S0132: 2, H0635: 2, H0098: 2, H0544: 2, H0546: 2, H0545: 2, H0242: 2, H0015: 2, S0250: 2, H0551: 2, H0268: 2, H0494: 2, L0659: 2, L0517: 2, L0809: 2, H0689: 2, S0028: 2, H0506: 2, H0170: 1, H0171: 1, H0295: 1, H0661: 1, H0639: 1, H0574: 1, H0599: 1, L0022: 1, H0108: 1, H0042: 1, H0004: 1, H0044: 1, H0355: 1, H0510: 1, H0266: 1, S0318: 1, S0316: 1, S0022: 1, H0328: 1, H0039: 1, H0622: 1, H0634: 1, H0488: 1, H0623: 1,				

						L0564: 1, H0509: 1, L0764: 1, L0662: 1, L0653: 1, H0144: 1, S0374: 1, L0565: 1, H0670: 1, S0380: 1, H0518: 1, H0555: 1, L0748: 1, L0740: 1, L0751: 1, L0754: 1, L0749: 1, L0777: 1, L0362: 1 and S0196: 1.		
HVVDC09	HVVDC09R	2155	161 - 313	4330		L0777: 17, L0439: 13, L0731: 9, H0521: 8, S0003: 5, H0547: 5, L0759: 5, L0803: 4, L0748: 4, L0750: 4, L0752: 4, L0351: 3, H0560: 3, L0751: 3, L0749: 3, L0757: 3, H0543: 3, S0134: 2, L0415: 2, S0116: 2, S0358: 2, S0376: 2, H0318: 2, H0581: 2, H0421: 2, H0328: 2, H0090: 2, L0646: 2, L0662: 2, L0768: 2, L0766: 2, S0328: 2, H0215: 2, S0406: 2, L0744: 2, L0608: 2, S0192: 2, H0170: 1, H0171: 1, H0556: 1,		

		H0222: 1, H0713: 1, L0420: 1, H0661: 1, H0663: 1, S0360: 1, S0410: 1, H0580: 1, S0007: 1, H0619: 1, H0351: 1, S6022: 1, H0587: 1, H0013: 1, H0427: 1, H0097: 1, H0052: 1, T0110: 1, H0231: 1, L0471: 1, H0266: 1, H0687: 1, S0250: 1, S0214: 1, H0428: 1, T0023: 1, H0628: 1, H0551: 1, H0412: 1, H0494: 1, H0366: 1, S0352: 1, S0440: 1, H0633: 1, H0646: 1, H0538: 1, S0422: 1, S0426: 1, L0369: 1, L0500: 1, L0770: 1, L0637: 1, L0642: 1, L0764: 1, L0381: 1, L0774: 1, L0775: 1, L0375: 1, L0806: 1, L0805: 1, L0654: 1, L0659: 1, L0783: 1, L0666: 1, L0664: 1, L0665: 1, S0374: 1, S0148: 1, H0520: 1, H0519: 1,			

						H0593: 1, S0126: 1, H0660: 1, H0648: 1, H0672: 1, S0330: 1, H0539: 1, S0152: 1, S0037: 1, L0747: 1, L0605: 1, S0011: 1, H0423: 1, H0422: 1 and H0506: 1.		
HVVDH44	HVVDH44R	2156	2 - 580	4331				
HVVDM23	HVVDM23R	2157	3 - 545	4332				
HVVDM31	HVVDM31R	2158	3 - 446	4333				
HVVDM45	HVVDM45R	2159	1 - 390	4334		L0742: 10, H0144: 6, H0265: 5, S0116: 4, S0046: 4, S0222: 4, H0556: 3, H0250: 3, H0052: 3, S0027: 3, L0595: 3, S0212: 2, H0306: 2, S0358: 2, H0013: 2, H0618: 2, H0124: 2, H0100: 2, S0053: 2, H0660: 2, S0330: 2, S3012: 2, L0748: 2, L0439: 2, L0745: 2, L0757: 2, H0445: 2, S0342: 1, H0484: 1, H0638: 1, S0007: 1, H0393: 1, H0437: 1, H0549: 1, H0438: 1, H0486: 1, H0253: 1, H0390: 1,		

					H0544: 1, H0046: 1, H0009: 1, H0023: 1, N0007: 1, T0010: 1, H0188: 1, H0687: 1, S0003: 1, H0030: 1, S0364: 1, L0455: 1, S0366: 1, H0090: 1, H0038: 1, H0551: 1, H0412: 1, H0059: 1, S0038: 1, H0130: 1, H0641: 1, S0142: 1, S0002: 1, H0517: 1, L0643: 1, L0771: 1, L0794: 1, L0766: 1, L0775: 1, L0654: 1, L0655: 1, L0352: 1, S0008: 1, H0435: 1, H0659: 1, H0658: 1, H0672: 1, H0521: 1, H0522: 1, S0044: 1, H0576: 1, L0779: 1, L0605: 1, L0593: 1, S0026: 1, H0667: 1, S0276: 1, S0196: 1, H0542: 1, H0423: 1 and H0506: 1.		
HVVDM53	HVVDM53R	2160	2 - 241	4335				
HVVDM83	HVVDM83R	2161	204 - 524	4336			L0766: 9, L0665: 7, L0659: 6, L0761: 5, L0662: 4, L0776: 4,	

S0418: 3, S0007: 3, H0559: 3, H0457: 3, H0617: 3, L0800: 3, L0751: 3, L0750: 3, H0309: 2, L0769: 2, L0667: 2, L0794: 2, L0664: 2, L0756: 2, L0779: 2, L0777: 2, L0758: 2, H0543: 2, H0556: 1, S0402: 1, S0114: 1, H0650: 1, H0656: 1, S0116: 1, H0484: 1, H0254: 1, H0255: 1, S0420: 1, S0354: 1, S0358: 1, H0676: 1, L0717: 1, S0222: 1, H0614: 1, L0622: 1, H0486: 1, H0069: 1, H0253: 1, H0581: 1, H0024: 1, H0051: 1, H0100: 1, H0494: 1, H0625: 1, H0561: 1, S0144: 1, L0374: 1, L0771: 1, L0773: 1, L0768: 1, L0387: 1, L0774: 1, L0653: 1, L0657: 1, L0384: 1, L0789: 1, L0790: 1, L0792: 1, H0684: 1, H0659: 1,							

HVVDN29	HVVDN29R	2162	2 - 685	4337	Asp-50 to Gly-55.	H0670: 1, H0672: 1, H0521: 1, S0027: 1, L0741: 1, L0754: 1, L0749: 1, L0780: 1, H0422: 1 and H0352: 1.			
HVVDN77	HVVDN77R	2163	1 - 594	4338					
HVVDP70	HVVDP70R	2164	40 - 354	4339	Lys-24 to Glu-34, Pro-47 to Arg-56, Tyr-77 to Pro-90.				
HVVDQ46	HVVDQ46R	2165	106 - 423	4340	Lys-12 to Thr-18, Glu-20 to Lys-26, Lys-83 to Lys-90.	H0551: 9, L0662: 9, L0471: 8, L0754: 7, L0766: 6, L0666: 6, S0358: 5, L0663: 5, L0750: 5, L0779: 5, S0007: 4, H0373: 4, L0770: 4, L0803: 4, L0777: 4, L0752: 4, L0757: 4, L0758: 4, S0114: 3, S0212: 3, H0673: 3, H0412: 3, L0769: 3, L0805: 3, L0776: 3, L0809: 3, S0126: 3, L0740: 3, H0506: 3, H0657: 2, S0116: 2, S0356: 2, S0360: 2, H0411: 2, H0390: 2, H0318: 2, S0214: 2, H0644: 2, H0617: 2, H0494: 2,			

		L0761: 2, L0773: 2, L0649: 2, L0774: 2, L0653: 2, L0529: 2, H0435: 2, L0749: 2, L0731: 2, L0588: 2, L0608: 2, S0026: 2, H0543: 2, H0294: 1, H0650: 1, H0341: 1, S0354: 1, S0376: 1, H0580: 1, H0339: 1, H0208: 1, S0132: 1, H0640: 1, H0369: 1, H0438: 1, H0574: 1, H0486: 1, H0101: 1, H0427: 1, H0097: 1, H0575: 1, H0037: 1, H0230: 1, H0052: 1, L0040: 1, H0544: 1, H0545: 1, H0086: 1, H0009: 1, S0024: 1, H0510: 1, S0250: 1, H0428: 1, H0166: 1, H0102: 1, H0560: 1, S0294: 1, H0509: 1, S0150: 1, H0633: 1, H0647: 1, L0631: 1, L0646: 1, L0764: 1, L0804: 1, L0806: 1, L0606: 1, L0657: 1, L0659: 1, L0636: 1,				

				L0783: 1, L0382: 1, L0789: 1, L0664: 1, L0665: 1, H0593: 1, H0690: 1, H0682: 1, H0684: 1, H0648: 1, H0672: 1, H0539: 1, H0521: 1, H0555: 1, H0478: 1, L0609: 1, L0744: 1, L0748: 1, L0747: 1, L0755: 1, H0445: 1, H0343: 1, L0581: 1, H0653: 1 and H0352: 1.	
HVVDQ49	HVVDQ49R	2166	2 - 103	4341	H0521: 7, H0052: 6, H0622: 5, L0646: 5, H0617: 4, L0662: 4, L0659: 4, H0556: 3, H0341: 3, H0484: 3, S0358: 3, H0580: 3, H0551: 3, L0369: 3, L0657: 3, L0664: 3, H0670: 3, S0328: 3, H0445: 3, L0603: 3, H0583: 2, S0212: 2, S0376: 2, S0007: 2, S0045: 2, S0046: 2, S0132: 2, H0438: 2, H0586: 2, H0486: 2, H0618: 2, S0474: 2, S0049: 2, H0545: 2,	

		H0268: 2, H0494: 2, H0509: 2, H0647: 2, L5565: 2, L0645: 2, L0764: 2, L0666: 2, L0665: 2, H0520: 2, H0689: 2, H0658: 2, S0152: 2, S0406: 2, S3014: 2, L0439: 2, L0751: 2, L0754: 2, L0750: 2, L0758: 2, S0434: 2, L0596: 2, L0581: 2, L0595: 2, L0601: 2, S6024: 1, H0294: 1, H0657: 1, H0656: 1, L0415: 1, H0669: 1, H0671: 1, S0356: 1, S0354: 1, S0360: 1, S0410: 1, H0340: 1, S0476: 1, S0278: 1, H0549: 1, H0550: 1, H0370: 1, H0587: 1, H0497: 1, H0643: 1, H0257: 1, H0318: 1, H0457: 1, H0041: 1, H0123: 1, H0024: 1, H0071: 1, H0375: 1, H0290: 1, H0292: 1, H0428: 1, L0142: 1, S0036: 1, H0063: 1, H0087: 1,			

HVVDS12	HVVDS12R	2167	1 - 732	4342	H0264: 1, H0059: 1, H0100: 1, S0448: 1, S0450: 1, S0440: 1, H0646: 1, S0144: 1, S0002: 1, L0762: 1, L0640: 1, L0639: 1, L0637: 1, L0372: 1, L0643: 1, L0771: 1, L0773: 1, L0648: 1, L0386: 1, L0774: 1, L0775: 1, L0375: 1, L0376: 1, L0378: 1, L0806: 1, L0653: 1, L0776: 1, L0782: 1, L0383: 1, L0791: 1, H0693: 1, H0547: 1, H0519: 1, H0435: 1, H0660: 1, H0672: 1, S0330: 1, H0696: 1, H0134: 1, H0478: 1, S0028: 1, L0743: 1, L0745: 1, L0747: 1, L0749: 1, L0731: 1, S0436: 1, L0593: 1, H0667: 1, H0543: 1, H0423: 1 and H0352: 1.		
HVVDS21	HVVDS21R	2168	2 - 730	4343		AR104: 17, AR089: 10, AR096: 10, AR061: 8, AR060: 4, AR055:		

HVVDS35	HVVDS35R	2169	2 - 640	4344		4	S0412: 22, L0662: 19, L0777: 14, S0010: 11, S0222: 9, S6028: 9, L0750: 9, T0010: 8, L0659: 8, L0747: 8, L0756: 8, L0663: 7, L0439: 7, H0051: 6, L0518: 6, L0754: 6, L0752: 6, S0280: 5, H0575: 5, S0358: 4, S0346: 4, L0753: 4, H0170: 3, H0662: 3, S0360: 3, H0427: 3, L0471: 3, H0373: 3, L0638: 3, L0637: 3, L0764: 3, L0774: 3, L0809: 3, L0666: 3, S0310: 3, H0672: 3, H0696: 3, L0731: 3, H0506: 3, H0713: 2, S0408: 2, H0411: 2, H0455: 2, H0574: 2, S0414: 2, H0486: 2, H0036: 2, S0049: 2, H0052: 2, H0327: 2, H0687: 2, H0428: 2, H0553: 2, H0644: 2, H0038: 2, L0520: 2,

		L0762: 2, L0770: 2, L0653: 2, L0517: 2, S0044: 2, L0442: 1, H0583: 1, L0443: 1, S0110: 1, S0282: 1, S0400: 1, H0661: 1, S0348: 1, S0356: 1, S0444: 1, H0329: 1, S0007: 1, H0619: 1, S6026: 1, S0300: 1, L0717: 1, S6022: 1, H0550: 1, H0592: 1, H0587: 1, H0599: 1, H0042: 1, H0590: 1, H0318: 1, H0309: 1, H0545: 1, H0563: 1, H0564: 1, H0123: 1, H0019: 1, S0050: 1, L0163: 1, S0388: 1, H0356: 1, H0328: 1, H0688: 1, H0039: 1, T0023: 1, H0031: 1, H0111: 1, H0169: 1, S0364: 1, L0455: 1, H0135: 1, H0163: 1, T0067: 1, T0069: 1, T0004: 1, H0100: 1, S0112: 1, L0370: 1, L0598: 1, L0769: 1, L0630: 1, L0800: 1,			

					L0648: 1, L0363: 1, L0768: 1, L0649: 1, L0803: 1, L0775: 1, L0375: 1, L0651: 1, L0784: 1, L0523: 1, L0805: 1, L0776: 1, L0527: 1, L0657: 1, L0635: 1, L0783: 1, L0789: 1, L0532: 1, L0664: 1, H0691: 1, T0068: 1, S0148: 1, H0693: 1, H0520: 1, H0593: 1, H0689: 1, H0684: 1, S0330: 1, S0380: 1, S0174: 1, H0555: 1, L0612: 1, L0743: 1, L0748: 1, L0751: 1, L0749: 1, L0779: 1, L0759: 1, L0689: 1, S0434: 1, L0604: 1, L0366: 1, S0106: 1 and S0021: 1.		
HVVDT25	HVVDT25R	2170	231 - 353	4345	Thr-35 to Asn-41.		

HVVDT29	HVVDT29R	2171	109 - 471	4346				
HVVDT44	HVVDT44R	2172	2 - 460	4347	Glu-11 to Arg-17, Arg-66 to Pro-79, Ser-104 to Gln-112, Ser-116 to Ser-125.	L0748: 11, L0758: 10, L0747: 8, L0439: 7, H0144: 6, L0805: 5, L0662: 4, H0341: 3, H0052: 3, L0794: 3, L0803: 3, L0809: 3, H0672: 3, L0741: 3, L0752: 3, H0619: 2, S0222: 2, H0013: 2, H0014: 2, H0266: 2, H0553: 2, L0455: 2, H0591: 2, L0770: 2, L0646: 2, L0764: 2, L0666: 2, L0665: 2, H0547: 2, S0126: 2, L0596: 2, L0589: 2, L0605: 2, H0543: 2, H0423: 2, H0624: 1, H0556: 1, H0686: 1, S0040: 1, H0717: 1, H0671: 1, S0476: 1, L0717: 1, H0411: 1, H0586: 1, H0333: 1, H0574: 1, L0021: 1, H0575: 1, H0618: 1, S0010: 1, H0318: 1, H0544: 1, H0009: 1, H0050: 1, L0471: 1, L0163: 1, S6028: 1,			

						S0022: 1, S0214: 1, H0628: 1, L0456: 1, S0366: 1, S0036: 1, H0090: 1, H0038: 1, H0040: 1, H0551: 1, H0264: 1, H0059: 1, S0112: 1, T0041: 1, H0647: 1, H0652: 1, S0426: 1, L0763: 1, L0638: 1, L0796: 1, L0630: 1, L0768: 1, L0649: 1, L0774: 1, L0378: 1, L0653: 1, L0657: 1, L0659: 1, L0783: 1, L0647: 1, L0791: 1, L0663: 1, L0664: 1, S0053: 1, H0519: 1, H0539: 1, H0696: 1, S0406: 1, H0555: 1, H0627: 1, L0744: 1, L0754: 1, L0746: 1, L0759: 1, S0031: 1, L0584: 1, L0608: 1, L0594: 1, S0026: 1, H0665: 1, H0136: 1, H0216: 1 and H0422: 1.		
HVVDU49	HVVDU49R	2173	328 - 600	4348	Asn-1 to Leu-6.	H0672: 2 and S6028: 1.	

HVVDW02	HVVDW02R	2174	3 - 266	4349				
HVVDW61	HVVDW61R	2175	2 - 502	4350	Ser-1 to Pro-9.			
HVVDX40	HVVDX40R	2176	294 - 455	4351				
HVVDX90	HVVDX90R	2177	14 - 511	4352				
HWHHD07	HWHHD07R	2178	2 - 391	4353				
HWLAC51	HWLAC51R	2179	11 - 178	4354				
HWLJR51	HWLJR51R	2180	167 - 343	4355		L0766: 3, H0651: 2, H0686: 1, H0656: 1, S0358: 1, L0773: 1, L0775: 1, L0657: 1, L0809: 1, L0792: 1 and L0731: 1.		
HWLME48	HWLME48R	2181	3 - 197	4356	Lys-1 to Asp-8, Lys-41 to Gln-50.	S0152: 7, L0601: 4, H0013: 3, H0551: 3, H0264: 3, H0521: 3, S0046: 2, H0050: 2, H0266: 2, S0022: 2, H0031: 2, H0644: 2, H0494: 2, H0519: 2, H0556: 1, S0040: 1, T0049: 1, S0001: 1, S0356: 1, S0354: 1, S0376: 1, S0045: 1, S0132: 1, H0549: 1,		

						H0550: 1, H0486: 1, T0039: 1, T0040: 1, S0280: 1, H0042: 1, H0575: 1, T0082: 1, H0421: 1, L0471: 1, H0373: 1, H0051: 1, H0355: 1, H0615: 1, H0622: 1, L0483: 1, S0364: 1, H0591: 1, H0268: 1, H0561: 1, S0210: 1, L0364: 1, L0649: 1, L0538: 1, L0659: 1, S0428: 1, H0144: 1, L0602: 1, S0390: 1, S0028: 1, L0758: 1, S0434: 1, L0485: 1 and H0543: 1.		
HWLVY65	HWLVY65R	2182	209 - 373	4357					
HWMIB35	HWMIB35R	2183	1 - 435	4358	Cys-6 to Ser-12, Gln-27 to Glu-32, Arg-52 to Arg-67, Asp-140 to Asp-145.				
HWNFO25	HWNFO25R	2184	43 - 210	4359	Thr-26 to Ile-34.				

	A												
HWWEF90	HWWEF90R	2185	1 - 300	4360									

[0040] The first column in Table 1 provides a unique "Clone ID NO:Z" for a cDNA clone related to each contig sequence disclosed in Table 1. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig, and at least a portion of SEQ ID NO:X was determined by directly sequencing the referenced clone. The reference clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length cDNA can be obtained by methods known in the art and/or as described elsewhere herein.

[0041] The second column in Table 1 provides a unique "Contig ID" identification for each contig sequence. The third column provides the "SEQ ID NO:X" identifier for each of the ovarian associated contig polynucleotide sequences disclosed in Table 1. The fourth column, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1, column 5, as SEQ ID NO:Y. Where the nucleotide position number "To" is lower than the nucleotide position number "From", the preferred ORF is the reverse complement of the referenced polynucleotide sequence.

[0042] The fifth column in Table 1 provides the corresponding SEQ ID NO:Y for the polypeptide sequence encoded by the preferred ORF delineated in column 4. In one embodiment, the invention provides an amino acid sequence comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by "ORF (From-To)". Also provided are polynucleotides encoding such amino acid sequences and the complementary strand thereto.

[0043] Column 6 in Table 1 lists residues comprising epitopes contained in the polypeptides encoded by the preferred ORF (SEQ ID NO:Y), as predicted using the algorithm of Jameson and Wolf, (1988) Comp. Appl. Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, at least one, two, three, four, five or more of the predicted epitopes as described in Table 1. It

will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly.

[0044] Column 7 in Table 1 provides an expression profile and library code: count for each of the contig sequences (SEQ ID NO:X) disclosed in Table 1, which can routinely be combined with the information provided in Table 4 and used to determine the normal or diseased tissues, cells, and/or cell line libraries which predominantly express the polynucleotides of the invention. The first number in column 7 (preceding the colon), represents the tissue/cell source identifier code corresponding to the code and description provided in Table 4. For those identifier codes in which the first two letters are not "AR", the second number in column 7 (following the colon) represents the number of times a sequence corresponding to the reference polynucleotide sequence was identified in the tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression. The sequences disclosed herein have been determined to be

predominantly expressed in ovarian tissues, including normal and diseased ovarian tissues (See Table 1, column 7 and Table 4).

[0045] Column 8 in Table 1 provides a chromosomal map location for certain polynucleotides of the invention. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Each sequence in the UniGene database is assigned to a "cluster"; all of the ESTs, cDNAs, and STSs in a cluster are believed to be derived from a single gene. Chromosomal mapping data is often available for one or more sequence(s) in a UniGene cluster; this data (if consistent) is then applied to the cluster as a whole. Thus, it is possible to infer the chromosomal location of a new polynucleotide sequence by determining its identity with a mapped UniGene cluster.

[0046] A modified version of the computer program BLASTN (Altshul et al., J. Mol. Biol. 215:403-410 (1990), and Gish et al., Nat. Genet. 3:266-272 (1993)) was used to search the UniGene database for EST or cDNA sequences that contain exact or near-exact matches to a polynucleotide sequence of the invention (the 'Query'). A sequence from the UniGene database (the 'Subject') was said to be an exact match if it contained a segment of 50 nucleotides in length such that 48 of those nucleotides were in the same order as found in the Query sequence. If all of the matches that met this criteria were in the same UniGene cluster, and mapping data was available for this cluster, it is indicated in Table 1 under the heading "Cytologic Band". Where a cluster had been further localized to a distinct cytologic band, that band is disclosed; where no banding information was available, but the gene had been localized to a single chromosome, the chromosome is disclosed.

[0047] Once a presumptive chromosomal location was determined for a polynucleotide of the invention, an associated disease locus was identified by comparison with a database of diseases which have been experimentally associated with genetic loci. The database used was the Morbid Map, derived from OMIM™ *(supra)*. If the putative chromosomal location of a polynucleotide of the invention (Query sequence) was associated with a disease in the Morbid Map database, an OMIM reference identification number was noted in column 9, Table 1, labeled "OMIM Disease Reference(s)". Table 5 is a key to the OMIM reference identification numbers (column 1), and provides a description of the associated disease in Column 2.

TABLE 2

Clone ID NO:Z	Contig ID:	SEQ ID NO: X	Analysis Method	PFam/NR Description	PFam/NR Accession Number	Score/ Percent Identity	NT From	NT To
HOVCD34	396327	11	blastx.2	(AK000844) unnamed protein product [Homo sapiens]	dbj|BAA91396.1|	58%	319	167
HEBGD58	498281	12	blastx.2	eggshell protein - fluke (Schistosoma haematobium) (subclone 1	pir|A44805|A44805	74%	3	98
HETCD42	533532	13	blastx.2	actin capping protein alpha subunit [Homo sapiens]	gb|AAA88848.1|	100%	90	947
HTXKC18	535854	14	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	62%	873	676
HLDRK20	553765	15	blastx.2	complement factor B [Homo sapiens]	emb|CAA51389.1|	91%	150	1283
H2MBD33	558474	16	blastx.2	NBR2 PROTEIN (NEXT TO BRCA1 GENE 2 PROTEIN).	sp|O15453|NBR2_HUMAN	100%	138	290
HSYBX61	558708	17	blastx.2	N-cadherin [Homo sapiens]	gb|AAA03236.1|	98%	3	515
HELHC03	562745	18	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb|AAF22026.1|AF118094_21	67% 81%	1063 1154	905 1089
HOFMP70	585385	19	blastx.2	precursor polypeptide	emb|CAA33261.1|	75%	120	347

HSKNZ25	585675	20	blastx.2	unknown protein [Homo sapiens]	gb|AAA88038.1|	63%	522		686
HDPFK39	588869	21	blastx.2	leukocyte adhesion glycoprotein precursor [Homo sapiens]	gb|AAA59491.1|	99% 90%	79 681		687 746
HL1AB07	638220	22	blastx.2	(AF151884) CGI-126 protein [Homo sapiens]	gb|AAD34121.1|AF151884_1	100% 91%	2 463		466 498
HHGAS83	654868	23	blastx.2	(AF044671) MM46 [Homo sapiens]	gb|AAD02337.1|	100%	133		393
HTSGU37	704405	24	blastx.2	(AF019406) collagen type IX alpha 2 chain [Homo sapiens]	gb|AAC33512.1|	100% 50% 51% 40% 51% 52% 53% 47% 54% 46% 52% 47% 48% 38% 48% 50% 46% 37% 49%	117 192 189 12 192 195 192 156 189 156 195 195 192 15 192 195 192 15 195		434 434 431 434 431 431 431 431 431 431 431 431 431 431 431 434 431 431 431

431	195	48%				
431	201	50%				
431	24	37%				
431	189	48%				
431	189	48%				
431	180	44%				
434	195	46%				
425	192	43%				
461	195	40%				
434	195	43%				
413	195	48%				
395	45	34%				
365	192	44%				
431	195	36%				
347	192	47%				
502	395	47%				
490	395	59%				
481	383	44%				
472	401	52%				
481	401	46%				
481	383	38%				
481	395	43%				
481	383	40%				
481	383	38%				
502	380	33%				
487	422	47%				
457	419	61%				
432	331	29%				
218	430	52%				
133	249	37%				

						38%	240	100
						50%	471	418
						32%	501	421
H2LAN34	705692	25	blastx.2	unnamed protein product [unidentified]	emb|CAB42187.1|	64%	14	199
HPMBZ40	711500	26	blastx.2	fusion protein: ubiquitin (bases 43_513); ribosomal protein S27a (bases 217_532) [Rattus norvegicus]	emb|CAA57432.1|	87%	402	563
HLYEP52	732342	27	blastx.2	tyrosine kinase activator protein 1 (TKA-1) [Homo sapiens]	emb|CAA90511.1|	95%	101	580
						92%	585	1007
						51%	149	547
						35%	619	1008
						32%	619	1008
						38%	775	846
HTTEC47	745343	28	blastx.2	unknown protein [Homo sapiens]	gb|AAA88038.1|	73%	696	232
						77%	229	20
						63%	902	627
HOFMO90	746416	29	blastx.2	(AF046001) zinc finger transcription factor [Homo sapiens]	gb|AAC78561.1|	89%	122	367
						70%	348	440
HCHND34	762806	30	blastx.2	cytochrome oxidase subunit III [Phoca vitulina]	emb|CAA45263.1|	81%	12	497
						86%	500	778

HAMGI86	785328	31	blastx.2	unnamed protein product [unidentified]	emb|CAB42212.1|	91% 94%	424 611	609 667
HLWCN67	794213	32	blastx.2	(AK014485) putative [Mus musculus]	dbj|BAB29387.1|	80%	386	631
HOFAC09	806819	33	blastx.2	acidic ribosomal phosphoprotein (P0) [Homo sapiens]	gb|AAA36470.1|	87% 52%	42 5	812 55
HRDEL61	824886	34	blastx.2	X-linked retinopathy protein [C-terminal, clone XEH.8c] [human, Peptide Partial, 100 aa] [Homo sapiens]	gb|AAB26149.1|	67% 45%	808 644	632 576
HDPOR60	828176	35	blastx.2	(AF151799) CGI-40 protein [Homo sapiens]	gb|AAD34036.1|AF151799_1	96% 82%	8 8	1867 1867
HPRTS71	828574	36	blastx.2	rTSbeta [Homo sapiens]	emb|CAA61761.1|	100%	45	458
HOHBI90	828862	37	blastx.2	tyrosine kinase receptor [Homo sapiens]	gb|AAA61243.1|	90% 63% 34% 53%	193 159 268 375	417 281 396 419
HOHAL47	828872	38	blastx.2	pericentriol material 1 [Homo sapiens]	gb|AAA60120.1|	88%	328	879
HYASE58	829298	39	blastx.2	O-6-methylguanine-DNA methyltransferase [Homo sapiens]	gb|AAA59594.1|	99%	74	694
HKAAH95	829958	40	blastx.2	ribosomal protein L22	emb|CAA55204.1|	70%	41	418

				[Rattus norvegicus]				
HTTIQ02	829981	41	blastx.2	activating transcription factor 3 [Homo sapiens]	gb|AAA20506.1|	96%	44	391
HWACG91	830195	42	blastx.2	heat shock protein 90, hsp90 [rats, brain, Peptide, 724 aa] [Rattus sp.]	gb|AAB23369.1|	82%	119	610
						93%	88	132
						37%	60	170
						76%	573	611
HUFBX52	830497	43	blastx.2	tenascin X [Homo sapiens]	gb|AAB47488.1|AAB 47488	99%	2	1525
						100%	1525	1785
						29%	20	1255
						26%	20	1114
						30%	20	1033
						27%	17	991
						29%	20	988
						28%	17	934
						25%	20	1096
						27%	8	898
						28%	2	973
						28%	14	856
						27%	20	892
						28%	17	712
						29%	20	712
						24%	365	1150
						24%	20	973
						32%	413	946
						29%	11	907
						24%	2	991
						30%	20	589
						32%	17	589

				29%	20	712	
				27%	20	601	
				27%	2	856	
				31%	716	1111	
				25%	176	1012	
				30%	176	562	
				25%	437	1096	
				29%	92	565	
				25%	521	1135	
				23%	437	1045	
				23%	434	1096	
				20%	488	1231	
				25%	860	1141	
				22%	557	1111	
				25%	860	1153	
				24%	557	1309	
				28%	809	1135	
				20%	641	1117	
				27%	437	1021	
				39%	437	604	
				36%	1487	1690	
				27%	557	1096	
				28%	1487	1684	
				23%	788	1135	
				22%	809	1309	
				30%	1487	1684	
				33%	638	877	
				29%	35	331	
				23%	455	1045	
				28%	1487	1684	

						27%	1487	1684
						30%	622	825
						25%	1487	1684
						37%	1556	1690
						28%	1487	1684
						23%	1487	1690
						27%	316	501
						48%	1110	1190
						30%	962	1150
						64%	1101	1142
						32%	267	404
						26%	52	498
						52%	1607	1663
						32%	1089	1181
						32%	1089	1181
						22%	650	1027
						53%	1398	1436
						60%	1089	1118
						41%	189	257
						29%	118	255
						37%	979	1083
						29%	1024	1146
						35%	361	480
						34%	1050	1175
HWLJE49	831453	44	blastx.2	2A9 peptide [Homo sapiens]	gb|AAA35886.1|	98%	46	315
HLQBT44	832454	45	blastx.2	precursor polypeptide [Homo sapiens]	emb|CAA28169.1|	100%	175	357
						92%	143	181
HSLGG58	833088	46	blastx.2	(AF096304) putative sterol reductase SR-1	gb|AAD09765.1|	100%	134	997
						97%	1018	1305

				[Homo sapiens]		61%	976	1029
HCHBQ33	840756	47	blastx.2	(AB005624) rig-analog DNA-binding protein [Sus scrofa]	dbj|BAA21510.1|	95% 100%	157 48	480 170
HDTMK30	840862	48	blastx.2	cysteine-rich intestinal protein [Homo sapiens]	gb|AAB61158.1|	100%	123	353
HDPFX64	841088	49	blastx.2	quinone oxidoreductase [Homo sapiens]	gb|AAA60239.1|	100%	404	1096
HODFG71	843485	50	blastx.2	(AF081114) ORF2 [Mus musculus domesticus]	gb|AAC72810.1|	29% 34% 50% 41% 34%	1121 591 281 1188 860	834 301 198 1102 717
HCE3I65	844534	51	blastx.2	kinesin-like motor protein KIF1C [Homo sapiens]	gb|AAC52117.1|	100%	11	172
HSAVH65	847355	52	blastx.2	plasmolipin [Rattus norvegicus]	emb|CAA90017.1|	48%	11	382
HBXFT41	847647	53	blastx.2	P26s4 [Cricetinae gen. sp.]	gb|AAB34132.1|	93%	707	805
HBMCM38	847821	54	blastx.2	(AF161356) HSPC093 [Homo sapiens]	gb|AAF28916.1|AF161356_1	55% 71% 59%	406 485 333	266 390 268

HACBO42	849064	55	blastx.2	G-protein coupled receptor, SREB1 - human	pir|JC7287|JC7287	57%	3	368
HODBF86	859572	56	blastx.2	(AF123880) gag polyprotein [multiple sclerosis associated retrovirus element]	gb|AAD48374.1|	40% 35%	225 542	437 652
HOABP90	859622	57	blastx.2	(AF089895) cAMP-dependent protein kinase subunit R2 beta [Oryctolagus cuniculus]	gb|AAF00037.1|	97%	628	735
HE8UE42	862010	58	blastx.2	(AJ224875) glucosyltransferase [Homo sapiens]	emb|CAA12176.1|	99%	15	1610
HUSJJ59	862481	59	blastx.2	(AF070661) HSPC005 [Homo sapiens]	gb|AAD20967.1|	100%	80	316
HSSDM07	863515	60	blastx.2	TcD37 homolog [Homo sapiens]	gb|AAF04914.1|U670 85_1	94% 95% 95%	224 647 160	691 1090 225
HBCBW52	866444	61	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	69%	1498	1202
HOGAS18	867969	62	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	79%	508	380
HHSDL18	869701	63	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb|AAF22026.1|AF1 18094_21	65% 61% 67%	590 429 317	721 536 427

HLDOG81	874506	65	blastx.2	(AF153191) nm23-H7 [Homo sapiens]	gb|AAD34622.1|AF153191_1	100% 29%	1232 1208	798 813
HTXQF81	874608	66	blastx.2	A4 protein [Homo sapiens]	gb|AAA35499.1|	100%	173	628
HCRNG90	874787	67	blastx.2	5'-nucleotidase [Homo sapiens]	emb|CAA39271.1|	98%	156	911
HPWCL64	874891	68	blastx.2	SPIN protein [Homo sapiens]	emb|CAA75163.1|	93%	44	643
HWLMV62	874930	69	blastx.2	(AL137608) hypothetical protein [Homo sapiens]	emb|CAB70840.1|	31%	104	397
H2MAC06	874931	70	blastx.2	neutrophil gelatinase associated lipocalin [Homo sapiens]	emb|CAA58127.1|	100%	170	763
HWLRF06	875093	71	blastx.2	GCP170 [Homo sapiens]	dbj|BAA23661.1|	60% 53%	23 3	373 383
HODDO41	875352	72	blastx.2	(AF064604) KE03 protein [Homo sapiens]	gb|AAC17109.1|	80%	350	454
HCHMQ74	875371	73	blastx.2	(AK001527) unnamed protein product [Homo sapiens]	dbj|BAA91741.1|	97%	3	440
HT3AI55	875682	74	blastx.2	(AK000219) unnamed protein product [Homo sapiens]	dbj|BAA91018.1|	98%	4	504
HMVBD68	876052	75	blastx.2	catalase [Campylobacter jejuni]	emb|CAA59444.1|	85%	207	103
HOCTA74	876487	76	blastx.2	propionyl-CoA carboxylase [Homo sapiens]	emb|CAA32763.1|	100%	65	292

HISET05	876686	77	blastx.2	(AJ270993) homeobox protein [Homo sapiens]	emb|CAB65909.1|	95% 66%	511 801	849 926
HCRQM22	876696	78	blastx.2	hepatocyte nuclear factor-3/fork head homolog 11B [Homo 1	gb|AAC51129.1|	84%	3	401
HLHTC92	877310	79	blastx.2	neuronal PAS2 [Homo sapiens]	gb|AAB47250.1|	97% 95% 32%	197 142 482	418 201 574
H2CAA49	879484	80	blastx.2	(AF053651) cellular apoptosis susceptibility protein [Homo sapiens]	gb|AAC35297.1|	100%	954	2108
HETKQ94	880545	81	blastx.2	(AL132954) putative protein [Arabidopsis thaliana]	emb|CAB75750.1|	35% 23% 33%	53 1556 1155	838 2080 1298
HOFMO23	882466	82	blastx.2	(AF089745) FK506-binding protein [Homo sapiens]	gb|AAC78853.1|	95% 54% 46% 52%	14 14 14 194	499 499 454 499
HNTNP58	882787	83	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb|AAF22026.1|AF1 18094_21	62% 60%	2230 2382	2391 2480
HOFNY28	888480	84	blastx.2	AF-1 [Homo sapiens]	gb|AAA16955.1|	63% 62%	18 416	476 658
HE8MQ01	889128	85	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb|AAF22026.1|AF1 18094_21	71%	2699	2490
HE2RG21	891139	86	blastx.2	peptidylprolyl isomerase [Homo sapiens]	emb|CAA37039.1|	100%	59	553
HHENW77	894855	87	blastx.2	vacuolar proton-ATPase subunit M9.2	emb|CAA75571.1|	71%	99	338

				[Homo sapiens]				
HOFNU55	897344	88	blastx.2	(AP000616) similar to RING-H2 finger protein RHA1a (AF078683) [Oryza sativa]	dbj|BAA85438.1|	70%	654	544
HE8TE40	897862	89	blastx.2	Rabin3 [Rattus norvegicus]	gb|AAA67890.1|	87% 93%	152 1086	1114 1532
HNTCH73	900546	90	blastx.2	bone morphogenetic protein 2B [Homo sapiens]	gb|AAA51835.1|	100%	195	1418
HHFBY53	902534	91	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	95% 22% 20% 22% 20%	6 837 801 833 836	128 956 932 940 955
HDPIE44	904763	92	blastx.2	(AF200706) UNC-84A [Caenorhabditis elegans]	gb|AAF15883.1|AF200706_1	47% 39% 25% 42%	1852 170 1375 109	2418 313 1524 171
HHSAX10	904783	93	blastx.2	delta-9 desaturase [Gallus gallus]	emb|CAA42997.1|	71%	9	680
HPIAX83	906066	94	blastx.2	weakly similar to E. nidulans bimA gene product (SP:P17885) [Caenorhabditis elegans]	gb|AAA81143.1|	39% 37% 19% 22% 21% 24%	1167 588 1776 1716 1653 2274	2459 1025 2474 2186 2093 2540
HOFNG28	908746	95	blastx.2	CD59 GLYCOPROTEIN	sp|O62680|CD59_PIG	54%	51	401

				PRECURSOR (MEMBRANE ATTACK COMPLEX 1 (PROTECTIN).				
HOFOB27	911947	96	blastx.2	(AL050283) hypothetical protein [Homo sapiens]	emb|CAB43384.1|	97% 77% 42%	640 380 329	1491 745 427
HHBHJ45	913831	97	blastx.2	initiation factor 2 [Homo sapiens]	gb|AAA67038.1|	100%	11	1498
HHPDV90	914163	98	blastx.2	(AF090942) PRO0657 [Homo sapiens]	gb|AAF24054.1|AF090942_1	53%	1122	874
HWMMQ47	915068	99	blastx.2	(AB029042) ATPase inhibitor precursor [Homo sapiens]	dbj|BAA88422.1|	100% 100%	53 1614	232 1754
HBGNY08	915214	100	blastx.2	(AP000616) similar to RING-H2 finger protein RHA1a (AF078683) [Oryza sativa]	dbj|BAA85438.1|	95% 100% 100% 100% 77% 90% 84% 44% 33% 35%	423 423 423 423 423 423 421 308 309 332	364 367 367 367 343 364 347 222 229 249
HODGH45	917394	101	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	80%	819	938
HWLKE58	917716	102	blastx.2	(AL031629) similar to RNA recognition motif. (aka RRM, RBD, or 1 1	emb|CAA20980.2|	52%	275	496

HRADL40	919433	103	blastx.2	dodecenoyl-CoA delta-isomerase [Homo sapiens]	emb|CAA81066.1|	100%	37	942
HOFMP73	919895	104	blastx.2	cathepsin B [Homo sapiens]	gb|AAC37547.1|	85%	113	1129
HOFMS02	920253	105	blastx.2	ATPase subunit 6 [Phoca vitulina]	emb|CAA45262.1|	54%	156	386
HUVHD12	921707	106	blastx.2	inositol polyphosphate 4-phosphatase [Rattus norvegicus]	gb|AAB01069.1|	35% 30% 60%	187 687 43	492 953 102
HMVDQ41	922191	107	blastx.2	(AL137496) hypothetical protein [Homo sapiens]	emb|CAB70771.1|	98% 99%	384 2	809 385
HODGI03	922879	108	blastx.2	replication protein A 14kDa subunit [Homo sapiens]	gb|AAA58350.1|	100%	447	635
HODHD14	922955	109	blastx.2	unknown protein [Homo sapiens]	gb|AAA88036.1|	60%	22	174
HODDC03	925296	110	blastx.2	ORF4 [Rattus norvegicus]	emb|CAA37647.1|	40% 58% 50%	126 344 307	245 433 336
HVCAG04	925735	111	blastx.2	(AF034633) GPR39 [Homo sapiens]	gb|AAC26082.1|	100% 29%	1281 1364	781 1293
HCRCE02	925837	112	blastx.2	putative p150 [Homo sapiens]	gb|AAC51269.1|	47% 50% 31% 40%	1 709 329 876	489 867 607 971
HHERA91	926067	113	blastx.2	(AK000530) unnamed protein product [Homo	dbj|BAA91234.1|	100%	2031	2399

				sapiens]				
HAGDL82	928396	114	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	75% 75%	5 210	208 257
HWBDS34	930484	115	blastx.2	Similar to S.cerevisiae hypothetical protein L3111 (S59316) [Homo sapiens]	dbj|BAA13405.1|	99%	57	983
H6ESA39	933568	116	blastx.2	BCDNA:LD21720 PROTEIN.	sp|Q9XZ25|Q9XZ25	47% 26%	623 14	1150 169
HPCOR06	933678	117	blastx.2	ORFII [Homo sapiens]	emb|CAA36480.1|	73% 62% 56% 60%	99 310 28 266	266 459 144 310
HTFNO06	933989	118	blastx.2	(AC009177) unknown protein [Arabidopsis thaliana]	gb|AAF27013.1|AC0 09177_3	39%	95	505
HODFY08	935520	119	blastx.2	(AB012223) ORF2 [Canis familiaris]	dbj|BAA25253.1|	45%	79	447
HRACK27	935717	120	blastx.2	(AL133045) hypothetical protein [Homo sapiens]	emb|CAB61372.1|	97%	681	1283
HRACW30	940639	121	blastx.2	(AF113887) kappa 1 immunoglobulin light chain [Homo sapiens]	gb|AAD29608.1|	93%	79	786
HOFOC32	941969	122	blastx.2	placental protein Diff33 [Homo sapiens]	emb|CAB09783.1|	84%	84	1502
HTTDM15	942511	123	blastx	(AL033127) hypothetical protein	emb|CAA21869.1|	27% 20%	62 759	427 959

				[Schizosaccharomyces pombe]		32%	965	1048
HOVAY63	944031	124	blastx.2	L1 retroposon, a portion of its ORF2 sequence [Rattus norvegicus]	emb|CAA43593.1|	65% 43% 34%	583 229 492	488 125 376
HDPFY41	946502	125	blastx.2	(AL050294) hypothetical protein [Homo sapiens]	emb|CAB43393.1|	94% 88% 52%	624 1984 2039	2072 2037 2113
HCOPB92	948608	126	blastx.2	ORF2, encodes a reverse transcriptase homolog [Homo sapiens]	gb|AAB60345.1|	60% 51% 66% 64%	99 2 257 169	182 106 310 243
HBJHO83	948708	127	blastx.2	envelope polyprotein [Mus musculus]	gb|AAA37565.1|	46% 45% 85%	177 64 2	365 174 61
HWMEO44	948719	128	blastx.2	(AF038963) RNA helicase [Homo sapiens]	gb|AAD19826.1|	99%	3	1343
HFXJA96	949001	129	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	93%	40	135
HTLGV19	949574	130	blastx.2	human complement C1r [Homo sapiens]	gb|AAA51851.1|	46% 36% 25%	72 604 567	539 732 740
HMSAC18	950257	131	blastx.2	(AB023584) reduced expression in cancer [Homo sapiens]	dbj|BAA88923.1|	100%	29	919
HAPRB43	950475	132	blastx.2	(AF124522) tetraspan NET-2 [Homo sapiens]	gb|AAD17317.1|	100%	3	536

HCCMD55	956895	133	blastx.2	catalase [Campylobacter jejuni]	emb|CAA59444.1|	94%	225	115
HKADF15	960658	135	blastx.2	(AF179370) insulin-like growth factor binding protein 5 protease [Rattus norvegicus]	gb|AAD52683.1|AF179370_1	94% 70% 32%	424 113 9	1551 499 155
HOGES55	961337	136	blastx.2	proline-rich protein [Mus musculus]	gb|AAA53048.1|	31% 33% 33% 33% 33% 27%	515 515 645 809 1099 1099	1117 1117 1397 1117 1452 1557
HKZAJ14	961458	137	blastx.2	(AL133051) hypothetical protein [Homo sapiens]	emb|CAB61378.1|	100%	219	1028
HLHAE14	962362	138	blastx.2	unknown protein [Homo sapiens]	gb|AAA88036.1|	60% 38%	1969 1820	1805 1680
HBCJN16	965190	139	blastx.2	calcyphosine [Homo sapiens]	emb|CAA66609.1|	99%	38	346
HCGAF29	965372	140	blastx.2	(AF083217) WD repeat protein WDR3 [Homo sapiens]	gb|AAD45865.1|AF083217_1	97% 27% 53% 34% 60% 60% 60% 46% 36% 53%	32 473 2270 2226 2269 2273 2272 2269 2226 2270	1660 940 2308 2312 2313 2317 2316 2307 2315 2314

HBJAB02	967807	142	blastx.2	(AK000069) unnamed protein product [Homo sapiens]	dbj|BAA90924.1|	100%	2	1267
HOUCR01	968171	143	blastx.2	similar to D.melanogaster peroxidasin(U11052) [Homo sapiens]	dbj|BAA13219.1|	33% 36% 30%	8 428 8	646 718 241
HDTIG18	968454	144	blastx.2	(AB017644) ubiquitin-conjugating enzyme E2 [Homo sapiens]	dbj|BAA76544.1|	100%	391	1011
HBLGD30	968949	145	blastx.2	preceruloplasmin (EC 1.16.3.1) [Homo sapiens]	gb|AAA51976.1|	100% 40% 41%	1 106 1183	2187 1512 2184
HFIHK04	969387	146	blastx.2	(AK000200) unnamed protein product [Homo sapiens]	dbj|BAA91005.1|	94%	306	151
HE8NQ16	970046	148	blastx.2	F20D12.3 gene product [*Caenorhabditis* elegans]	gb|AAA81672.1|	38% 36% 25% 25%	359 1259 2021 974	1099 1891 2653 1102
HOFMS34	973010	149	blastx	hPMSR6 [Homo sapiens]	gb|AAA97460.1|	59% 66%	324 552	536 605
HOFOB11	973505	150	blastx.2	15 KD SELENOPROTEIN PRECURSOR.	sp|O60613|SE15_HUMAN	95%	18	503
HTLHN94	974667	151	blastx.2	(AB012955) KIP2 [Homo sapiens]	dbj|BAA33584.1|	99%	444	812
HLDRT31	975754	152	blastx.2	hepatocyte growth	gb|AAA50165.1|	90%	91	639

				factor-like protein [Homo sapiens]		50%	100	579
						44%	100	579
						50%	346	558
HWLHW86	975771	153	blastx.2	epithelial glycoprotein (EGP) precursor [Homo sapiens]	gb|AAA35723.1|	100%	245	1186
HOFNM53	976051	154	blastx.2	(AL110276) hypothetical protein [Homo sapiens]	emb|CAB53711.1|	37%	498	1094
HDPSE86	976207	155	blastx	(AF086713) rasGAP-activating-like protein [Homo sapiens]	gb|AAD09006.1|	83%	757	1311
						91%	1	420
						96%	508	774
						83%	401	511
						30%	361	450
						42%	1	42
HHFOE18	976216	156	blastx.2	(AL117664) hypothetical protein [Homo sapiens]	emb|CAB56034.1|	52%	376	1275
						35%	14	139
HHFNH27	976968	157	blastx.2	Nascent polypeptide associated complex alpha subunit [Homo sapiens]	emb|CAA56869.1|	98%	26	589
						100%	3	26
HMMBZ81	977264	158	blastx.2	alternatively spliced product using exon 13A [Homo sapiens]	gb|AAB49034.1|	52%	545	369
HSLGF32	977704	159	blastx.2	(AL133063) hypothetical protein [Homo sapiens]	emb|CAB61387.1|	52%	2	250
HODFU73	978812	161	blastx.2	myeloid ecotropic viral integration site-1b	gb|AAA85509.1|	94%	371	652

				[Mus musculus]				
HNBUA49	978998	162	blastx.2	(AF085356) putative RNA helicase [Homo sapiens]	gb|AAD40191.1|	97% 38%	365 130	1282 183
HVVDU73	979346	163	blastx.2	ladinin [Homo sapiens]	gb|AAB58817.1|	99%	53	1603
HHESX72	979468	164	blastx.2	(AK001665) unnamed protein product [Homo sapiens]	dbj|BAA91821.1|	96%	202	480
HOCPY88	979547	165	blastx.2	(AF035299) similar to GAP binding protein p62do [Homo sapiens]	gb|AAB88182.1|	100%	136	939
HOGDC64	979666	166	blastx.2	kinase A anchor protein [Homo sapiens]	emb|CAA66000.1|	100% 40% 45%	236 1 40	769 165 204
HSIEA14	980139	167	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	72% 70% 68%	613 783 667	482 673 620
HSPSY43	980269	168	blastx.2	alphaII spectrin [Rattus norvegicus]	emb|CAA62350.1|	100%	937	1659
HSXBH24	981029	169	blastx.2	(AF181645) BcDNA.GH12144 [Drosophila melanogaster]	gb|AAD55431.1|AF181645_1	44% 36% 28% 26% 31% 22% 35% 23%	301 1207 1684 1702 1609 1711 1819 1867	1263 2148 2040 2067 1896 2061 1962 2157
HOFAE61	981108	170	blastx.2	predicted using Genefinder; Similarity to E.coli guanosine-3',	emb|CAB05030.1|	59% 71% 50%	173 5 727	430 88 822

				1 [Caenorhabditis elegans]				
HCFOF82	981272	171	blastx.2	(AL133558) hypothetical protein [Homo sapiens]	emb|CAB63713.1|	98%	2	901
HOCMT79	981309	172	blastx.2	similar to yeast Sec6p, Swiss-Prot Accession Number P32844; 1 1 norvegicus]	gb|AAA85505.1|	94% 96%	481 2	1413 481
HKAEI03	981319	173	blastx.2	Wiskott-Aldrich Syndrome Protein [Mus musculus]	gb|AAC52556.1|	35% 39% 40% 55% 34%	392 233 407 306 288	6 6 300 253 211
HOCPO31	981593	174	blastx.2	(AF015037) endooligopeptidase A related protein; EOPA related protein [Oryctolagus cuniculus]	gb|AAB99905.1|	79%	381	812
HAOTG88	981606	175	blastx.2	No definition line found [Escherichia coli]	gb|AAC43132.1|	100%	217	2
HVCAH21	981768	176	blastx.2	(AF044956) NADH:ubiquinone oxidoreductase B22 subunit [Homo sapiens]	gb|AAD42057.1|AF044956_1	100%	80	616
HFPCK56	981812	177	blastx.2	(AF099664) Cdc42 effector protein 4 [Homo sapiens]	gb|AAD16299.1|	88%	3	125

HAOSJ58	981859	178	blastx.2	(AJ271784) chromokinesin [Homo sapiens]	emb|CAB75427.1|	87%	24	482
HOPJT48	981862	179	blastx.2	(AP000616) similar to RING-H2 finger protein RHA1a (AF078683) [Oryza sativa]	dbj|BAA85438.1|	95%	321	250
						91%	318	247
						95%	316	245
						100%	350	285
						100%	349	284
						100%	348	283
						100%	345	280
						100%	347	282
						100%	346	281
						100%	342	277
						100%	344	279
						100%	343	278
						100%	340	275
						100%	339	274
						100%	341	276
						100%	336	271
						100%	338	273
						100%	337	272
						100%	335	270
						100%	333	268
						100%	334	269
						100%	330	265
						100%	331	266
						100%	332	267
						100%	327	262
						100%	328	263
						100%	329	264

						100%	324	259
						100%	325	260
						91%	313	242
						88%	318	241
						84%	316	239
						64%	318	217
HCFAV61	981914	180	blastx.2	(AK000541) unnamed protein product [Homo sapiens]	dbj|BAA91241.1|	99%	54	1091
HOVJY54	982032	182	blastx.2	similar to cuticle collagen [Caenorhabditis elegans]	emb|CAA91932.1|	36%	593	156
						33%	763	578
						37%	763	635
						29%	1088	942
HE8MM52	982197	184	blastx.2	(AL023828) cDNA EST yk289g5.5 comes from this gene; cDNA EST 1 1 yk653f1.5 comes from this gene; cDNA EST EMBL:C07875 comes from th	emb|CAA19455.1|	48%	628	1137
						46%	121	552
HJBCC19	982465	185	blastx.2	(AK000516) unnamed protein product [Homo sapiens]	dbj|BAA91222.1|	99%	503	949
						90%	8	157
HODAA93	982618	186	blastx.2	(AJ224979) MTMR1 [Homo sapiens]	emb|CAA12271.1|	96%	63	737
						74%	698	790
HSPSI74	982764	187	blastx.2	L6 [Homo sapiens]	gb|AAA36158.1|	100%	100	705
HCEHZ42	983008	188	blastx.2	unknown [murine herpesvirus 68]	gb|AAB66420.1|	32%	2124	3170
						38%	1167	1451
						38%	1167	1451

						38%	1167	1451
						38%	1167	1451
						38%	1167	1451
						32%	2127	2414
						39%	2140	2304
						35%	94	375
						35%	94	375
						35%	94	375
						37%	116	334
						37%	116	334
						37%	116	334
						37%	116	334
						34%	620	817
						34%	620	817
						34%	620	817
						34%	620	817
						34%	620	817
						37%	7	135
						37%	7	135
						38%	1234	1422
						38%	1234	1422
						38%	1234	1422
HDPVU15	983592	189	blastx.2	replication factor C, 37-kDa subunit [Homo sapiens]	gb|AAB09785.1|	100%	72	686
						100%	685	954
						100%	1025	1138
						100%	1216	1308
HT5GC28	984008	190	blastx.2	alpha subunit; forms heterodimer with NC2 alpha/Dr1 [Homo sapiens]	emb|CAA65358.1|	60%	34	423
						58%	248	421

HDABW50	984168	191	blastx.2	t-complex polypeptide 1 (AA 1-556) [Homo sapiens]	emb|CAA37064.1|	100%	185	451
HAQBH11	985043	192	blastx.2	(AJ243177) Xenopus RPA interacting protein alpha [Xenopus laevis]	emb|CAB45690.1|	42% 46% 46% 28% 35%	393 110 238 244 247	626 244 393 369 336
HMVAW42	985280	193	blastx.2	extensin-like protein [Zea mays]	emb|CAA84230.1|	28%	960	10
HAGDF03	985323	194	blastx.2	neuromedin U [Homo sapiens]	emb|CAA53619.1|	100%	169	690
HOPKI29	985401	195	blastx.2	(AF087135) F1FO-type ATPase subunit d [Homo sapiens]	gb|AAC36338.1|	100%	65	547
HAJCA11	985580	196	blastx.2	GTBP-ALT [Homo sapiens]	dbj|BAA23673.1|	98% 97%	394 2	1293 391
HWAHA11	986078	197	blastx.2	(AB031292) proteolipid protein 2 [Mus musculus]	dbj|BAA83500.1|	31%	134	511
HSAMI43	986158	198	blastx.2	(AF111423) chromosome condensation protein XCAP-G [Xenopus laevis]	gb|AAD09819.1|	54% 53%	14 14	1471 1387
HNFJH73	986165	199	blastx.2	erm [Homo sapiens]	emb|CAA65246.1|	100%	1	591
HNTCH03	986328	200	blastx.2	put. ORF [Homo sapiens]	emb|CAA39297.1|	48% 70%	103 651	363 680
HSUAA20	986744	201	blastx.2	replication protein A,	gb|AAA36584.1|	100%	2	1312

				70-kDa subunit [Homo sapiens]		100%	1315	1347
HSPAD08	986767	202	blastx.2	(AL031663) dJ461P17.6 (Major Epididymis-specific protein E4 1 1 sapiens]	emb|CAB37641.1|	100%	905	1054
HFKBA32	987018	203	blastx.2	(AL121740) hypothetical protein [Homo sapiens]	emb|CAB57330.1|	76% 83%	256 540	1092 743
HHFLU49	987071	204	blastx.2	(AF068749) sphingosine kinase [Mus musculus]	gb|AAC61698.1|	46%	278	718
HOENX16	987112	205	blastx.2	helix-loop-helix protein [Homo sapiens]	emb|CAA69255.1|	100%	368	850
HTFOW71	987165	206	blastx.2	(AF121862) sorting nexin 13 [Homo sapiens]	gb|AAD27835.1|AF121862_1	96% 88%	38 3	400 53
HTTAG03	987262	207	blastx.2	SPIN protein [Homo sapiens]	emb|CAA75163.1|	94% 47% 41% 44% 36% 33% 37% 61%	57 81 663 492 801 516 195 1228	1289 476 1238 857 1061 812 428 1278

HNTNN89	987577	208	blastx.2	elongation factor 2 [Homo sapiens]	emb|CAA35829.1|	98% 77% 100%	110 543 2	547 713 115
HRADQ96	987636	209	blastx.2	(AF134726) NG23 [Homo sapiens]	gb|AAD21821.1|	96% 100%	303 6	398 29
HLDCJ16	987808	210	blastx.2	3-oxoacyl-[acyl-carrier-protein] reductase (EC 1.1.1.100). [Escherichia coli]	dbj|BAA35901.1|	39%	159	761
HCOPH23	987900	211	blastx.2	nucleoporin-like protein [Homo sapiens]	emb|CAA61667.1|	94%	289	447
HEEAQ78	988159	212	blastx.2	TBX2 [Homo sapiens]	gb|AAA73861.1|	99% 98% 33% 29% 29%	164 1 12 206 260	475 165 191 394 403
HOFNY16	988363	213	blastx.2	(AL110239) hypothetical protein [Homo sapiens]	emb|CAB53690.1|	99% 100%	242 144	853 236
HSLCX45	988441	214	blastx.2	(AB006572) RPB5 meidating protein [Homo sapiens]	dbj|BAA34781.1|	98%	106	1404
HLMJB09	988499	215	blastx.2	cDNA EST yk575f9.3 comes from this gene [Caenorhabditis elegans]	emb|CAA94859.1|	39% 34%	270 496	491 591
HOVEF60	988526	216	blastx.2	envelope protein [Homo sapiens]	gb|AAA88027.1|	75% 36%	377 11	598 298
HOGDR72	988536	217	blastx.2	RNA polymerase II transcription factor SIII	gb|AAA75522.1|	100%	62	415

				p18 subunit [Homo sapiens]				
HOCMF20	988556	218	blastx.2	high mobility group protein 2a [Homo sapiens]	emb|CAA71143.1|	99%	1	366
HAMHH26	988737	219	blastx.2	MHC Class I region proline rich protein [Homo sapiens]	gb|AAB40147.1|	98%	429	728
HHFOX44	988904	220	blastx.2	binding protein [Homo sapiens]	emb|CAA00862.1|	99% 52% 56% 28% 36% 31% 45%	153 308 804 67 88 637 48	587 907 956 222 318 789 107
HPWDE54	989029	221	blastx.2	(AJ252060) TRABID protein [Homo sapiens]	emb|CAB64449.1|	97%	1	2127
HNOAX46	989183	222	blastx.2	Berg36 [Homo sapiens]	emb|CAA67781.1|	100%	49	789
HCQCB28	989280	223	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	60% 77% 57%	471 301 1148	292 167 1107
HOOJB32	989321	224	blastx.2	(AB007619) EBAG9 [Homo sapiens]	dbj|BAA22572.1|	100%	535	1173
HMWJJ35	989323	225	blastx.2	Leu2 [Homo sapiens]	emb|CAA75516.1|	93% 100% 72%	312 551 260	410 607 346
HHFIA95	989396	226	blastx.2	(AB002533) Qip1 [Homo sapiens]	dbj|BAA19546.1|	92% 24% 47% 35%	120 279 1 5	1178 974 216 121

HSPSH36	989607	227	blastx.2	transcription factor ILF [Homo sapiens]	emb|CAA43200.1|	94% 100%	77 250	247 282
HAAAA25	989952	228	blastx.2	p67 myc protein [Homo sapiens]	dbj|BAA01374.2|	100%	100	660
HTEMJ16	990060	229	blastx.2	(AF151075) HSPC241 [Homo sapiens]	gb|AAF36161.1|AF151075_1	97%	361	618
HWLAB90	990146	230	blastx.2	(AF067817) VAV-3 protein [Homo sapiens]	gb|AAC79695.1|	98% 89%	2 622	652 813
HOSED43	990184	231	blastx.2	(AK001851) unnamed protein product [Homo sapiens]	dbj|BAA91941.1|	100%	2	790
HNODF50	990254	232	blastx.2	(AF222742) synaptic glycoprotein SC2 [Homo sapiens]	gb|AAF32373.1|AF222742_1	100% 93% 100%	616 187 116	1155 528 181
HLWBV17	990255	233	blastx.2	(AF222742) synaptic glycoprotein SC2 [Homo sapiens]	gb|AAF32373.1|AF222742_1	100% 78% 57%	282 123 26	542 206 88
HOCQH66	990435	234	blastx.2	collagen type VI, alpha 3 chain [Homo sapiens]	emb|CAA36267.1|	98% 43% 40% 45% 46% 44% 47% 48% 45% 46% 43% 44% 41%	43 40 40 43 49 43 46 46 46 46 49 49 43	2745 330 330 327 330 327 330 330 330 330 339 327 327

						48%	85	330
						41%	46	327
						41%	49	327
						41%	46	333
						43%	49	327
						26%	391	960
						26%	1117	1587
						42%	531	647
HOGDC67	990546	235	blastx.2	pyrroline-5-carboxylate reductase [Homo sapiens]	gb|AAA36407.1|	99%	75	1031
HCDBO02	990609	236	blastx.2	TIP120 [Rattus norvegicus]	dbj|BAA13432.1|	97%	10	3258
						66%	131	202
HODGN92	990611	237	blastx.2	coded for by C. elegans cDNA yk38h3.5; coded for by C. elegans 1 1 [Caenorhabditis elegans]	gb|AAA83581.1|	37%	107	499
HPDRP30	990751	238	blastx.2	(AL122073) hypothetical protein [Homo sapiens]	emb|CAB59248.1|	99%	1436	2098
HBXFN09	990769	239	blastx.2	ORF 3 [Homo sapiens]	gb|AAA58464.1|	42%	65	226
						71%	43	63
HDTBO75	990913	240	blastx.2	(AF065391) ZIS1 [Homo sapiens]	gb|AAD09746.1|	100%	241	324
						39%	4	72
						45%	13	72
						32%	1	75
						36%	1	72
						33%	13	75
						21%	4	72

HELGN26	991014	241	blastx.2	(AF123653) FEZ1 [Homo sapiens]	gb|AAD23834.1|AF1 23653_1	47% 52% 38%	192 32 171	902 181 470
HODCU15	991048	242	blastx.2	(AF213822) hypothetical protein [Zymomonas mobilis]	gb|AAF23786.1|AF2 13822_1	42% 56% 27%	1104 1552 1747	1550 1710 1929
HOGDI51	991268	243	blastx.2	(AF007872) torsinB [Homo sapiens]	gb|AAC51733.1|	100% 92% 69%	238 607 803	492 873 940
HLWAF02	991516	244	blastx.2	(AK001371) unnamed protein product [Homo sapiens]	dbj|BAA91655.1|	100%	192	449
HRKPA16	991654	245	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	76%	263	24
HPDQX94	991761	246	blastx.2	microsomal glutathione S-transferase 2 [Homo sapiens]	gb|AAC51768.1|	100%	210	650
HEAAY09	992678	247	blastx.2	TSC-22 [Homo sapiens]	dbj|BAA07598.1|	96%	40	333
HPDRH78	992780	248	blastx.2	(AK000474) unnamed protein product [Homo sapiens]	dbj|BAA91189.1|	100% 79%	598 933	903 1079
HODFO57	992973	250	blastx.2	(AF176524) F-box protein FBL10 [Mus musculus]	gb|AAF09133.1|	67%	8	811
HOCPZ44	993380	251	blastx.2	(AF151075) HSPC241 [Homo sapiens]	gb|AAF36161.1|AF1 51075_1	99%	157	540
HPAMU38	993403	252	blastx.2	cDNA EST	emb|CAB04720.1|	48%	111	407

				yk269g12.5 comes from this gene; cDNA EST EMBL:D27364 1 1 comes from this gene; cDNA EST EMBL:D36272 comes fr		30% 37%	450 20	803 91
HNGGK47	993602	253	blastx.2	(AF126163) HHLA3 protein [Homo sapiens]	gb|AAD33288.1|AF126163_1	78%	277	372
HODGN51	993754	254	blastx.2	putative p150 [Homo sapiens]	gb|AAC51261.1|	64% 65% 48% 69%	124 77 3 545	549 205 134 613
HODCT60	993806	255	blastx.2	(AK002129) unnamed protein product [Homo sapiens]	dbj|BAA92096.1|	56% 50%	239 624	382 671
HAQBV81	993918	256	blastx.2	putative [Rattus norvegicus]	emb|CAA52297.1|	43%	3	695
HDTGF49	993931	257	blastx.2	(AK002081) unnamed protein product [Homo sapiens]	dbj|BAA92074.1|	87%	1073	1531
HOGBN62	994134	258	blastx.2	(AF132952) CGI-18 protein [Homo sapiens]	gb|AAD27727.1|AF132952_1	95% 95% 43%	155 12 421	295 155 558
HSKGR42	994234	259	blastx.2	(AK000741) unnamed protein product [Homo sapiens]	dbj|BAA91354.1|	73% 96% 56% 51% 34% 28%	147 1 412 413 291 273	536 153 528 499 404 377

						28% 32%	316 291	468 437
HOEBQ85	994356	260	blastx.2	(AL117435) hypothetical protein [Homo sapiens]	emb|CAB55923.1|	97%	3	362
HOPJG01	994536	261	blastx.2	creatine kinase B [Homo sapiens]	emb|CAA33389.1|	100%	1	1134
HKBAK06	994596	262	blastx.2	Cks1 protein homologue [Homo sapiens]	emb|CAA38702.1|	100% 81%	231 67	410 144
HKGCN61	994664	263	blastx.2	NifU-like protein [Homo sapiens]	gb|AAC50885.1|	100%	169	531
HFOYI37	994776	265	blastx.2	ribosomal protein [Homo sapiens]	dbj|BAA03400.1|	100%	85	513
HOFNL18	994874	266	blastx.2	(AL031432) dJ465N24.1 (PUTATIVE novel protein similar to predicted yeast and worm proteins) [Homo sapiens]	emb|CAB37991.1|	84%	43	339
HOFNT57	994954	267	blastx.2	phosphate cyclase [Homo sapiens]	emb|CAA72364.1|	98% 93%	273 124	1157 270
HCBMT45	994993	268	blastx.2	lin-10 protein homolog [Rattus norvegicus]	gb|AAB51383.1|	96%	46	1311

HATDZ56	995200	269	blastx.2	(AL031668) dJ64K7.2 (eukaryotic translation initiation factor 2, subunit 2 (beta, 38kD)) [Homo sapiens]	emb|CAB43741.1|	100%	156	1154
HOCQI44	995229	270	blastx.2	(AL050348) dJ447F3.2 (ubiquitin-conjugating enzyme E2 H10) [Homo sapiens]	emb|CAB66118.1|	92%	8	520
HNOJG43	995562	271	blastx.2	alpha 4 protein [Homo sapiens]	emb|CAA70119.1|	99%	73	981
HSPSB95	995590	272	blastx.2	proteasome subunit HsN3 [Homo sapiens]	dbj|BAA05647.1|	99%	47	838
HCORG29	995806	273	blastx.2	SRp30c [Homo sapiens]	gb|AAA93069.1|	100%	100	762
HCRNO02	995894	274	blastx.2	N8 GENE PRODUCT LONG ISOFORM, N8L PROTEIN=D52 1 HK4A1].	sp|G1488414|G14884 14	74% 63%	33 2	149 34
HCBOI79	996247	275	blastx.2	(AK000857) unnamed protein product [Homo sapiens]	dbj|BAA91400.1|	80% 100%	99 419	506 637
HVCAB73	996337	276	blastx.2	NF45 protein [Homo sapiens]	gb|AAA20993.1|	94% 70%	90 1175	1307 1297
HSDJH04	996619	277	blastx.2	RNA polymerase II subunit [Homo sapiens]	gb|AAA91459.1|	100%	219	419
HSOAN18	996804	278	blastx.2	(AB030654) AP-4 clathrin adaptor-related complex sigma4 subunit [Homo sapiens]	dbj|BAA82970.1|	100%	1	222

HHEHF49	996874	279	blastx.2	L-lactate permease [Escherichia coli]	gb|AAA03583.1|	91%	770	222
HCHCF36	996903	280	blastx.2	rac protein kinase-beta [Homo sapiens]	gb|AAA36585.1|	96%	1	456
HAHCK58	997127	281	blastx.2	(AK001138) unnamed protein product [Homo sapiens]	dbj|BAA91517.1|	98%	1	228
HETIJ06	997165	282	blastx.2	(AF152097) CGI-05 protein [Homo sapiens]	gb|AAD34147.1|AF152097_1	97%	218	352
HAPOE30	997595	283	blastx.2	nuclear protein SA-1 [Homo sapiens]	emb|CAA99731.1|	100% 88%	244 11	759 244
HRGDC33	997862	284	blastx.2	C13F10.7 gene product [Caenorhabditis elegans]	gb|AAC47967.1|	34% 44%	301 301	735 648
HMTMB91	997873	285	blastx.2	(AC004858) U1 small ribonucleoprotein 1SNRP homolog; match to PID:g4050087 [Homo sapiens]	gb|AAF19255.1|AC004858_3	100% 41%	1037 487	1174 555
HFAAD07	998059	286	blastx.2	(AJ132948) rfg7 protein [Homo sapiens]	emb|CAB55313.1|	97% 97%	274 32	957 298
HE8TG67	998517	287	blastx.2	product is related to clathrin-associated protein. [Homo sapiens]	dbj|BAA09762.1|	97% 97%	1226 502	1360 618
HACNC39	998533	288	blastx.2	weak similarity to Arabidopsis thaliana ubiquitin-like protein 8 [Caenorhabditis elegans]	gb|AAB42266.1|	80%	162	380

HCOQP78	998901	289	blastx.2	(AB008927) neuropsin type2 [Homo sapiens]	dbj|BAA82666.1|	100%	75	989
HCGMA67	998905	290	blastx.2	rab8 [Canis familiaris]	emb|CAB56776.1|	100%	47	664
HSKHK19	998968	291	blastx.2	(AC004890) similar to HUB1; similar to BAA24380 (PID:g2789430) [Homo sapiens]	gb|AAD45825.1|AC004890_2	98% 38% 54% 70%	2 566 1095 558	466 721 1160 587
HAGGR59	999124	292	blastx.2	histone H1-I [Volvox carteri]	gb|AAA74723.1|	36%	270	596
HOPKS83	999148	293	blastx.2	(AF026124) schwannoma-associated protein [Mus musculus]	gb|AAC73069.1|	93%	425	1894
HE8CY70	999157	294	blastx.2	SEP PROTEIN (FRAGMENT).	sp|Q15352|Q15352	100% 92% 66% 48%	691 32 3 635	1368 691 128 706
HPCTI53	999243	295	blastx.2	(AJ250562) tetraspanin protein [Homo sapiens]	emb|CAB65594.1|	88% 100%	34 474	546 779
HOPKN50	999313	296	blastx.2	(AF017790) retinoblastoma-associated protein HEC [Homo sapiens]	gb|AAB80726.1|	95%	152	1702
HAPAI17	999778	297	blastx.2	(AK001832) unnamed protein product [Homo sapiens]	dbj|BAA91931.1|	97%	2	115
HHAUV59	999808	298	blastx.2	p116Rip [Mus musculus]	gb|AAB18198.1|	79% 67% 21%	95 547 1454	1903 801 1669

HTXLL31	1000315	299	blastx.2	(AK001770) unnamed protein product [Homo sapiens]	dbj|BAA91897.1|	36% 27% 26% 39%	663 666 4 481	992 1379 645 621
HDPUH64	1000339	300	blastx.2	CRAG protein [Drosophila melanogaster]	emb|CAA76938.1|	42% 66% 65%	8 525 475	598 692 534
HTTHS93	1000424	301	blastx.2	(AL117183) conserved hypothetical protein [Schizosaccharomyces pombe]	emb|CAB54870.1|	25% 36%	55 755	720 994
HMVCG79	1000582	302	blastx.2	(AJ387747) sialin [Homo sapiens]	emb|CAB62540.1|	100%	3	854
HODHK20	1000669	303	blastx.2	(AF176555) A-kinase anchoring protein 220 [Homo sapiens]	gb|AAF07045.1|AF176555_1	94%	76	627
HCHMO53	1000875	304	blastx.2	(AK000462) unnamed protein product [Homo sapiens]	dbj|BAA91181.1|	41%	296	556
HFKKG84	1001066	305	blastx.2	(AF047002) transcriptional coactivator ALY [Homo sapiens]	gb|AAD09608.1|	98%	1	666
HOFMT20	1001333	306	blastx.2	(AK000541) unnamed protein product [Homo sapiens]	dbj|BAA91241.1|	48%	40	237
HPAMB04	1001695	307	blastx.2	17-kDa protein [Homo sapiens]	gb|AAA36038.1|	99%	127	621
HODEK48	1001901	308	blastx.2	pol [porcine endogenous retrovirus]	emb|CAA76582.1|	41% 33%	398 25	721 423

HVVCB28	1001954	309	blastx.2	S19 ribosomal protein [Homo sapiens]	gb|AAA89070.1|	100%	373	807
HCOOS01	1002071	310	blastx.2	proliferation associated gene (pag) [Homo sapiens]	emb|CAA48137.1|	100%	105	701
HDACA35	1002096	311	blastx.2	(AK001496) unnamed protein product [Homo sapiens]	dbj|BAA91724.1|	73%	23	652
HOVDG59	1002328	312	blastx.2	(AK001610) unnamed protein product [Homo sapiens]	dbj|BAA91787.1|	100% 28%	13 40	639 588
HTJAD78	1002459	313	blastx.2	immunoglobulin gamma-2 heavy chain [Homo sapiens]	emb|CAB58438.1|	98%	64	1041
HCDCF69	1002468	314	blastx.2	lysyl hydroxylase [Homo sapiens]	gb|AAA60116.1|	98%	353	508
HPTTW90	1002479	315	blastx.2	Huntington's Disease (HD) gene [Homo sapiens]	emb|CAA93701.1|	99%	3	356
HSUBG36	1002492	316	blastx.2	snRNP E protein (AA 1-92) [Homo sapiens]	emb|CAA31007.1|	100%	67	342
HODFU72	1002527	317	blastx.2	(AB022660) SET-binding protein (SEB) [Homo sapiens]	dbj|BAA82444.1|	32%	57	689
HCNSF57	1002545	318	blastx.2	immunoglobulin lambda light chain [Homo sapiens]	emb|CAA40940.1|	96%	134	826
HODJU13	1002546	319	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	85%	2	106

HODIL25	1002551	320	blastx.2	nuclear protein, NP220 [Homo sapiens]	dbj|BAA11748.1|	99%	207	1556
HUVHS56	1002563	321	blastx.2	(AF097441) phenylalanine-tRNA synthetase [Homo sapiens]	gb|AAC83802.1|	100%	174	755
HPMJQ18	1002565	322	blastx.2	unnamed protein product [unidentified]	emb|CAB69299.1|	91% 53%	407 209	823 247
HLHCI46	1002591	323	blastx.2	folate-binding protein precursor [Homo sapiens]	gb|AAA35822.1|	100%	153	923
HAOSD18	1002607	324	blastx.2	homologue to elongation factor 1-gamma from A.salina [Homo sapiens]	emb|CAA45089.1|	100%	98	1408
HACNG47	1002610	325	blastx.2	ribosomal protein L37a [Homo sapiens]	gb|AAA60280.1|	100%	86	361
HOPJX95	1002729	326	blastx.2	RPS16 [Homo sapiens]	gb|AAA60583.1|	100%	244	681
HSCLR05	1002807	327	blastx.2	HKR-T1 [Homo sapiens]	gb|AAB24264.2|	58% 42% 51% 41%	3 3 3 591	176 281 215 659
HVVAO74	1002811	328	blastx.2	clathrin light-chain A [Homo sapiens]	gb|AAA59505.1|	100%	178	831
HVVBK18	1003155	330	blastx.2	proteasome subunit HsC7-I [Homo sapiens]	dbj|BAA05646.1|	100%	323	925
HSCLM55	1003224	332	blastx.2	(AC004983) similar to PID:g3877944 [Homo sapiens]	gb|AAD15546.1|	100%	28	768

HETJU23	1003706	333	blastx.2	(AL133630) hypothetical protein [Homo sapiens]	emb|CAB63754.1|	99%	881	1477
						99%	504	881
						73%	64	513
						100%	373	507
						28%	878	1084
						26%	1121	1327
						35%	343	459
HNOKB73	1004480	334	blastx.2	(AF026692) frpHE [Homo sapiens]	gb|AAC04617.1|	93%	18	515
HODFB06	1004583	335	blastx.2	(AB012223) ORF2 [Canis familiaris]	dbj|BAA25253.1|	41%	362	760
						51%	3	143
						63%	135	191
						51%	265	360
						70%	200	259
HODJA76	1004619	336	blastx.2	(AF113685) PRO0974 [Homo sapiens]	gb|AAF29584.1|AF113685_1	56%	171	293
						38%	277	453
HODJY60	1004625	337	blastx.2	putative [Homo sapiens]	gb|AAC37567.1|	100%	141	683
HODEF10	1004627	338	blastx.2	(AB005878) BYJ15 [Nicotiana tabacum]	dbj|BAA21615.1|	69%	10	135
HODFB03	1004631	339	blastx.2	DNA primase (p58 subunit) [Homo sapiens]	emb|CAA52378.1|	90%	1	789
HPMLN08	1004632	340	blastx.2	(AF027728) kinesin-related protein [Xenopus laevis]	gb|AAC60300.1|	25%	518	1165
						26%	135	533
						24%	524	1051
						23%	524	1060
HODEH08	1004633	341	blastx.2	(AK001410) unnamed protein product [Homo sapiens]	dbj|BAA91675.1|	87%	22	369

HEGBF25	1004635	342	blastx.2	(AF069736) PCAF associated factor 65 beta [Homo sapiens]	gb|AAC39906.1|	98%	165	758
HODJB51	1004643	343	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	52%	405	142
HODEC38	1004648	344	blastx.2	(AJ010089) GANP protein [Homo sapiens]	emb|CAB52687.1|	97% 52% 62% 87%	68 1993 2055 2030	208 2175 2150 2053
HODIQ24	1004660	345	blastx.2	(AK001892) unnamed protein product [Homo sapiens]	dbj|BAA91965.1|	100%	3	236
HVVDD56	1004887	346	blastx.2	gpStaf50 [Homo sapiens]	emb|CAA57684.1|	97% 66%	435 1204	1238 1245
HTHDV01	1004950	347	blastx.2	c-fos protein [Homo sapiens]	gb|AAA52471.1|	100%	153	1292
HVVDJ95	1005153	348	blastx.2	Ral guanine nucleotide dissociation stimulator [Homo sapiens]	gb|AAA52360.1|	80%	185	400
HODIY29	1005236	349	blastx.2	DNA-binding protein 5 - human	pir|S26650|S26650	97% 89% 57% 59% 53% 52% 58% 48% 43% 65%	1 13 1 4 19 4 4 4 1 4	963 963 453 453 453 444 408 453 453 276

						41%	1	444
						42%	25	441
HOELP29	1005359	350	blastx.2	uridine kinase [Mus musculus]	gb|AAB50568.1|	71%	309	1013
HWLFG04	1005384	351	blastx.2	tax1-binding protein TXBP151 [Homo sapiens]	gb|AAA75595.2|	100%	2	1015
HYAAC49	1005511	352	blastx.2	(AF001628) interactor protein AblBP4 [Homo sapiens]	gb|AAD00897.1|	97%	107	688
						93%	107	727
						33%	155	688
						88%	58	111
						70%	690	749
						100%	717	737
						100%	720	740
						87%	717	740
HCOOA71	1005843	353	blastx.2	nuclear autoantigen fo 14 kDa [Homo sapiens]	emb|CAB09660.1|	76%	68	205
HOUFB45	1005974	354	blastx.2	(AF072441) calcineurin binding protein cabin 1 [Homo sapiens]	gb|AAD40846.1|AF072441_1	98%	2	403
HUSJI14	1006018	355	blastx.2	(AK001676) unnamed protein product [Homo sapiens]	dbj|BAA91829.1|	99%	411	2081
						98%	40	381
						54%	377	448
HMCDB21	1006055	356	blastx.2	alpha1A-voltage-dependent calcium channel [Homo sapiens]	gb|AAB49678.1|	100%	435	509
HSDEY08	1006142	357	blastx.2	SWI/SNF complex 60 KDa subunit [Homo	gb|AAC50697.1|	92%	573	1037
						80%	136	603

				sapiens]		47%	158	403
						37%	105	377
						27%	666	773
						34%	323	418
HOOJT92	1006215	358	blastx.2	(AC007055) unknown [Homo sapiens]	gb|AAD31938.1|AC007055_3	97%	44	172
HNORE03	1006250	359	blastx.2	(AK000927) unnamed protein product [Homo sapiens]	dbj|BAA91430.1|	100%	4	669
HPCTS21	1006317	360	blastx.2	(AE001373) predicted secreted protein [Plasmodium falciparum]	gb|AAC71813.1|	27%	237	1049
						22%	177	1187
HFATL31	1006399	361	blastx.2	light chain 3 subunit of microtubule-associated proteins 1A and 1B [Rattus norvegicus]	gb|AAA20645.1|	82%	146	505
HE2JE77	1006445	362	blastx.2	(AF078848) BUP [Homo sapiens]	gb|AAD44480.1|	100%	2	328
HCBNX87	1006470	363	blastx.2	(AL137735) hypothetical protein [Homo sapiens]	emb|CAB70899.1|	99%	1	420
HNTDJ68	1006483	364	blastx.2	l(3)mbt protein homolog [Homo sapiens]	gb|AAC69438.1|	64%	3	626
						41%	628	1410
						44%	3	533
						40%	201	611

						60%	631	840
						55%	6	221
						49%	628	840
						28%	459	614
HTRAA05	1006512	365	blastx.2	heat shock protein [Drosophila melanogaster]	emb|CAA30276.1|	33%	109	294
						50%	393	428
HMTAL96	1006635	366	blastx.2	ras-like protein [Homo sapiens]	gb|AAA36547.1|	98%	90	515
HDTJP21	1006858	367	blastx.2	(AF090942) PRO0657 [Homo sapiens]	gb|AAF24054.1|AF0 90942_1	67%	17	136
						73%	126	215
HISEQ81	1006943	368	blastx.2	(AF009668) polyprotein [multiple sclerosis associated retrovirus]	gb|AAB66528.1|	83%	247	17
						70%	435	235
						87%	514	395
HODFH02	1006953	369	blastx.2	(AK002129) unnamed protein product [Homo sapiens]	dbj|BAA92096.1|	74%	346	438
						52%	426	488
HOCPP18	1007230	370	blastx.2	(AF150100) small zinc finger-like protein [Homo sapiens]	gb|AAD40006.1|AF1 50100_1	100%	305	571
HODFP91	1007941	371	blastx.2	SpZ12-1 [Strongylocentrotus purpuratus]	gb|AAA85705.1|	27%	69	806
H6EDU06	1007976	372	blastx.2	(AF151894) CGI-136 protein [Homo sapiens]	gb|AAD34131.1|AF1 51894_1	99%	75	449
HPCRD26	1008013	373	blastx.2	predicted using Genefinder; Similarity to Yeast mitochondrial 1 1 yk432a4.3 comes	emb|CAB02879.1|	35%	423	1229
						44%	1220	1294

HSIEH63	1008027	374	blastx.2	(AF007791) secreted cement gland protein XAG-2 homolog [Homo sapiens]	gb|AAC77358.1|	65%	87	554
HPASD51	1008071	375	blastx.2	PDI (E.C.5.3.4.1) [Bos taurus]	gb|AAA30690.1|	33%	81	752
HCOQH27	1008154	376	blastx.2	IEF SSP 9502 [Homo sapiens]	gb|AAA65201.1|	100%	131	1315
HCOPZ14	1008179	378	blastx.2	guanylate kinase [Homo sapiens]	gb|AAC37598.1|	84%	889	1023
HODEC78	1008299	379	blastx.2	bicaudal-D [Homo sapiens]	gb|AAB94805.1|	94% 97% 40% 72% 20% 35% 21% 25% 39%	379 1203 319 1351 328 1191 328 856 328	1230 1343 744 1470 1188 1343 792 1056 396
HODEF29	1008304	380	blastx.2	(AB005878) BYJ15 [Nicotiana tabacum]	dbj|BAA21615.1|	80% 22%	38 202	133 330
HODEF78	1008314	382	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	93%	3	101
HODEL83	1008324	383	blastx.2	pol gene protein; Xxx [Homo sapiens]	gb|AAA88026.1|	76%	132	407
HHPSH76	1008325	384	blastx.2	(AF019386) heparan sulfate 3-O-sulfotransferase-1	gb|AAB84388.1|	100%	286	1206

				precursor [Homo sapiens]				
HBGBE52	1008326	385	blastx.2	T2 [Mus musculus]	emb|CAA48048.1|	29% 33%	782 661	408 407
HBQAB30	1008327	386	blastx.2	alternatively spliced [Homo sapiens]	gb|AAA35654.1|	93%	24	737
HLHCB31	1008332	387	blastx.2	matrix metalloproteinase, MT2MMP [Homo sapiens]	dbj|BAA13071.1|	97%	1	558
HPFDV51	1008335	388	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	66% 69%	62 3	217 71
HODEG13	1008337	390	blastx.2	unknown protein [Homo sapiens]	gb|AAA88038.1|	65% 66% 67%	2 183 341	214 341 478
HHPFK16	1008345	391	blastx.2	Krueppel-related DNA-binding protein [Homo sapiens]	gb|AAA52689.1|	79% 65%	166 387	405 470
HARAL81	1008349	392	blastx.2	(AF090894) PRO0113 [Homo sapiens]	gb|AAF24018.1|AF090894_1	55% 55%	217 323	104 216
HFTAU42	1008350	393	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	59% 55% 54%	1282 1115 1113	1106 990 1051
HETDA81	1008358	394	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	88% 42%	3 221	110 262

HODEI92	1008359	395	blastx.2	(AF062006) orphan G protein-coupled receptor HG38 [Homo sapiens]	gb|AAC28019.1|	45%	1 306
HODEG86	1008379	397	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	55% 51%	236 400 424 546
HODFA57	1008396	398	blastx.2	retrovirus-related pol polyprotein pseudogene - human 1	pir|A26718|A26718	36% 58%	102 596 17 67
HODFB31	1008401	399	blastx.2	(AL021768) ATP binding protein-like [Arabidopsis thaliana]	emb|CAA16931.1|	52%	1 261
HTEMP79	1008406	400	blastx.2	(AJ223782) CDC10 [Mus musculus]	emb|CAA11547.1|	95% 51% 94%	374 628 136 375 625 678
HODEI59	1008423	401	blastx.2	(AJ237734) ribophorin II [Homo sapiens]	emb|CAB54801.1|	100% 100% 97% 39% 30%	296 1273 1404 1859 1270 1404 1876 1959 1145 1279
HODEF94	1008429	402	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	100%	2 85
HPFCZ53	1008445	403	blastx.2	(AF176818) transcription factor AP-2 [Silurana tropicalis]	gb|AAD53289.1|AF176818_1	79% 93%	296 769 3 296
HWACN71	1008764	404	blastx.2	(AF105261) natural killer cell receptor 2B4 [Homo sapiens]	gb|AAD32538.1|AF105261_1	100%	174 1268
HOFMU69	1009017	405	blastx.2	(AF077038) unc-50	gb|AAD27771.1|AF0	97%	375 1151

				related protein homolog [Homo sapiens]	77038_1			
HETBR71	1009343	407	blastx.2	(AL049610) dJ1055C14.1 (transcription elongation factor A (SII)-like 1) [Homo sapiens]	emb|CAB55700.1|	99%	182	658
HE2ES17	1009349	408	blastx.2	CDV-1R protein [Mus musculus]	emb|CAA71519.1|	89%	3	914
HELHM06	1009362	409	blastx.2	pre-mRNA splicing factor [Homo sapiens]	gb|AAA36649.1|	85%	56	349
HE2ES61	1009388	411	blastx.2	(AC005034) gc-rich sequence dna-binding factor [Homo sapiens]	gb|AAC82536.1|	100%	555	427
HE2SO43	1009398	412	blastx.2	protein Htf9C [Mus musculus]	emb|CAA39515.1|	74%	73	390
HLHCI07	1009403	413	blastx.2	(AL031985) dJ228H13.1 (similar to Ribosomal protein L21e) 1	emb|CAB46381.1|	75%	127	8
HTTBR65	1009414	414	blastx.2	E1A-F [Homo sapiens]	dbj|BAA02234.1|	100%	55	231
HPFCV71	1009453	415	blastx.2	(AK002129) unnamed protein product [Homo sapiens]	dbj|BAA92096.1|	60%	449	622
HCABR46	1009479	416	blastx.2	BST-2 [Homo sapiens]	dbj|BAA05679.1|	88%	127	423
HCRCB80	1009482	417	blastx.2	OTK27 [Homo sapiens]	dbj|BAA23363.1|	100%	96	479
HPMLW78	1009833	418	blastx.2	E2A/PRL fusion	gb|AAA36764.1|	99%	1	606

				protein [Homo sapiens]				
HODJX27	1009854	420	blastx.2	(AJ005324) glutamate permease [synthetic construct]	emb|CAA06471.1|	90%	1	123
HODJV85	1009857	421	blastx.2	ribosomal protein [Homo sapiens]	gb|AAA36589.1|	77% 35%	366 505	205 416
HOOJO38	1009918	422	blastx.2	ribosomal protein L14 [Homo sapiens]	dbj|BAA13443.1|	98%	1	603
HAOSI69	1009949	423	blastx.2	bcl-1 [Homo sapiens]	gb|AAA58392.1|	100%	271	1155
HSDIY67	1010157	424	blastx.2	hypoxanthine (guanine) phosphoribosyltransferase [Cricetulus longicaudatus]	emb|CAA42198.1|	69%	60	689
HSDZM65	1010299	425	blastx.2	(AJ010953) putative Ca2+-transporting ATPase [Homo sapiens]	emb|CAA09425.1|	100%	2	337
HPDOC39	1010400	426	blastx.2	(AB009282) cytochrome b5 [Homo sapiens]	dbj|BAA23735.1|	99%	171	608
HE2PS15	1010525	427	blastx.2	(AF054175) mitochondrial proteolipid 68MP homolog [Homo sapiens]	gb|AAC39909.1|	100%	63	236
HTTKH22	1010596	428	blastx.2	weak similarity to	emb|CAA86663.1|	38%	887	1435

				microtubule associated proteins; cDNA EST 1 1 EMBL:D37339 comes from this gene; cDNA EST EMBL:D6742		32%	1442	1561
						27%	692	949
HNOJG33	1010698	429	blastx.2	SAS [Homo sapiens]	gb|AAC39524.1|	98%	590	1207
						68%	1203	1274
						100%	1246	1278
HPDVK48	1011090	430	blastx.2	AZ-1 [Mus musculus]	dbj|BAA19002.1|	82%	236	730
						77%	1100	1630
						82%	735	1100
						70%	1	243
						23%	200	775
						23%	1100	1603
						34%	753	1103
						25%	203	769
						29%	1148	1612
						26%	1160	1612
						27%	284	775
						27%	1091	1600
						31%	747	1091
						19%	302	709
						27%	750	1085
						27%	738	1094
						30%	747	1097
						26%	239	727
						27%	660	1088
						22%	747	1085
						33%	750	1007

						20%	780	1331
						23%	735	1061
						25%	305	691
						22%	750	1106
						27%	413	730
						28%	413	730
						42%	151	249
						32%	747	938
						31%	106	246
						23%	401	673
						25%	533	706
						24%	97	273
HNORJ10	1011186	431	blastx.2	hypoxia-inducible factor 1 alpha [Homo sapiens]	gb|AAC50152.1|	99%	30	1628
						54%	120	152
HPDRG92	1011209	432	blastx.2	2-oxoglutarate dehydrogenase precursor [Homo sapiens]	dbj|BAA01393.1|	82%	7	234
						73%	237	326
						35%	1	60
HOFMQ81	1011303	433	blastx.2	unnamed protein product [Bos taurus]	emb|CAA71771.1|	66%	152	541
						66%	97	141
HOFNF27	1011315	434	blastx.2	coxsackie and adenovirus receptor protein [Homo sapiens]	emb|CAA68868.1|	89%	60	623
HOFND52	1011316	435	blastx.2	interferon alpha /beta receptor [Homo sapiens]	emb|CAA61914.1|	43%	240	533
						44%	59	205
HOFNL96	1011321	436	blastx.2	GM2-activator protein [Homo sapiens]	emb|CAA43408.1|	49%	72	551
						43%	28	123
HOFNF53	1011332	437	blastx.2	(AF039584) decay	gb|AAC77439.1|	46%	62	883

				accelerating factor soluble-form precursor; CD55 [Rattus norvegicus]		41%	1155	1706
						28%	161	784
						32%	880	1101
						75%	99	143
HOFMU61	1011360	438	blastx.2	(AJ009698) embigin protein [Rattus norvegicus]	emb|CAA08796.1|	60%	377	1249
HOFOF35	1011499	439	blastx.2	(AF061738) leucine aminopeptidase [Homo sapiens]	gb|AAD17527.1|	86%	88	582
						88%	602	736
						82%	20	88
						25%	52	450
						90%	576	605
HULFJ37	1011537	440	blastx.2	midkine [Homo sapiens]	dbj|BAA01457.1|	100%	124	552
HOFME75	1011607	441	blastx.2	collagen binding protein 2 [Homo sapiens]	dbj|BAA11829.1|	93%	224	970
HOPKO74	1011608	442	blastx.2	collagen binding protein 2 [Homo sapiens]	dbj|BAA11829.1|	99%	229	1482
HCBBA51	1011755	443	blastx.2	(AF077045) ATP synthase epsilon chain [Homo sapiens]	gb|AAD27778.1|AF077045_1	100%	114	266
HDHEB13	1011773	444	blastx.2	type X collagen [Bos taurus]	emb|CAA37624.1|	42%	202	942
						42%	235	942
						52%	229	534
						49%	229	537
						50%	202	537
						49%	232	549
						47%	235	537

						45%	229	534
						45%	229	549
						49%	235	537
						49%	232	537
						45%	199	534
						48%	211	537
						49%	235	537
						49%	235	534
						47%	226	537
						45%	235	534
						44%	226	534
						42%	202	534
						35%	235	750
						45%	235	537
						34%	235	750
						42%	232	534
						40%	202	549
						48%	283	537
						32%	53	277
						50%	50	130
						31%	47	277
HDTMG36	1011821	445	blastx.2	(AJ271158) DAPIT protein [Rattus norvegicus]	emb|CAB71156.1|	91%	75	248
HVVCJ38	1011830	446	blastx.2	CLC-7 chloride channel protein [Homo sapiens]	emb|CAA91556.1|	100%	20	817
HPAMY22	1011840	447	blastx.2	scleraxis=basic helix-loop-helix transcription factor [mice, embryos,	gb|AAB34266.1|	79%	4	180

				Peptide, 207 aa] [Mus sp.]				
HE9CP86	1011847	448	blastx.2	(AF161499) HSPC150 [Homo sapiens]	gb|AAF29114.1|AF161499_1	100%	137	727
HPDOU46	1011883	449	blastx.2	(AF117582) calcyphosine-like protein [Manduca sexta]	gb|AAF16704.1|AF117582_1	52%	72	692
HFCDW73	1011901	450	blastx.2	(AK000376) unnamed protein product [Homo sapiens]	dbj|BAA91124.1|	94%	6	425
HOVEB13	1011919	451	blastx.2	(AL117452) hypothetical protein [Homo sapiens]	emb|CAB55934.1|	99%	96	905
HPAMS93	1011948	452	blastx.2	TB1 [Homo sapiens]	gb|AAA03587.1|	97%	125	1105
HCRBN71	1011966	453	blastx.2	unknown [Saccharomyces cerevisiae]	gb|AAA79999.1|	40%	64	420
HCRNC60	1012005	454	blastx.2	tropomyosin [Homo sapiens]	gb|AAA36771.1|	81% 91% 31% 28% 27% 24% 22%	769 1202 796 766 766 925 1238	1236 1519 1245 1257 1218 1212 1459
HSPSJ24	1012064	455	blastx.2	IFN-alpha responsive transcription factor [Homo sapiens]	gb|AAA58687.1|	100%	392	925
HOVDZ22	1012136	457	blastx.2	unnamed protein product [unidentified]	emb|CAB69195.1|	89%	2	82

HCONM62	1012454	460	blastx.2	100 kDa coactivator [Homo sapiens]	gb|AAA80488.1|	97% 29%	5 2	1306 646
HOGEU69	1012459	461	blastx.2	TB2 [Homo sapiens]	gb|AAA66351.1|	99%	101	691
HVVBD93	1012469	462	blastx.2	(AK001339) unnamed protein product [Homo sapiens]	dbj|BAA91635.1|	33% 27%	23 601	382 852
HCOMV86	1012482	463	blastx.2	DC classII histocompatibility antigen alpha-chain [Homo sapiens]	emb|CAA25141.1|	94% 98%	307 71	834 319
HCONJ23	1012519	464	blastx.2	DNA-PK [Homo sapiens]	gb|AAA79184.1|	97%	1	990
HVVBL04	1012536	465	blastx.2	inositol 1,4,5-trisphosphate receptor type 2 [Mus musculus]	emb|CAA94861.1|	98%	2	310
HVVAF65	1012542	466	blastx.2	peroxisomal acyl-CoA oxidase [Homo sapiens]	emb|CAA50574.1|	98%	3	731
HCONN76	1012545	467	blastx.2	p78 protein [Homo sapiens]	gb|AAA36458.1|	99%	64	1716
HODEG95	1012599	469	blastx.2	(AF118082) PRO1902 [Homo sapiens]	gb|AAF22026.1|AF118094_21	64% 41%	452 550	300 443

HCOOX52	1012600	470	blastx.2	C1 inhibitor [Homo sapiens]	emb|CAA30314.1|	100%	68	1567
HVVBK78	1012645	472	blastx.2	protein kinase C mu [Homo sapiens]	emb|CAA53384.1|	98%	101	643
HVVBK73	1012646	473	blastx.2	amiloride binding protein [Homo sapiens]	emb|CAA55046.1|	93% 52%	2 648	709 710
HCOMW35	1012652	474	blastx.2	NBK [Homo sapiens]	emb|CAA62013.1|	100%	48	527
HVVBJ28	1012654	475	blastx.2	(AF026851) cytochrome oxidase assembly factor [Homo sapiens]	gb|AAD08640.1|	99% 99%	44 1102	1099 1701
HVVAF41	1012665	477	blastx.2	(AB006202) cytochrome b small subunit of complex II [Homo sapiens]	dbj|BAA22054.1|	100%	74	550
HVVAS32	1012668	478	blastx.2	giantin [Homo sapiens]	emb|CAA53052.1|	95% 97% 27% 22% 23% 23% 22% 23% 23% 22% 20% 22% 19%	24 2032 141 123 222 135 117 153 117 126 117 69 126	2036 2856 1877 2252 2015 2078 2030 2021 1829 2018 1877 2039 1883

						22%	441	1994
						20%	1281	2039
						23%	2014	2622
						84%	43	117
						34%	2437	2700
						22%	2071	2631
						20%	2125	2628
						24%	2143	2625
						23%	2128	2616
						23%	1987	2652
						21%	2032	2538
						24%	2140	2625
						20%	2206	2634
						23%	2035	2622
						21%	2053	2694
						24%	1987	2559
						20%	2104	2715
						25%	2032	2313
						19%	2065	2610
						19%	2152	2628
						20%	2032	2565
						28%	2080	2238
						100%	110	136
						22%	3779	3910
						43%	3833	3901
						21%	2035	2616
						27%	2905	3057
HVVAQ70	1012678	479	blastx.2	voltage dependent anion channel form 3 [Homo sapiens]	gb|AAB93872.1|	100%	134	982

HVVAQ22	1012684	480	blastx.2	smooth muscle myosin light chain kinase, smMLCK [C-terminal] 1 1	gb|AAB50715.1|	98% 98%	67 67	573 573
HTAES83	1012693	481	blastx.2	specific 116-kDa vacuolar proton pump subunit [Homo sapiens]	gb|AAA97878.1|	99% 99%	302 2350	1990 2961
HOCMN67	1012700	482	blastx.2	receptor kinase [Homo sapiens]	gb|AAA58391.1|	99% 92% 54% 60%	1 1142 1310 1332	1155 1306 1375 1376
HAPOW35	1012711	483	blastx.2	agpet8 protein. [Schizosaccharomyces pombe]	emb|CAA94699.1|	48%	113	553
HOVJM48	1013085	484	blastx.2	(AL035593) dJ310J6.1 (novel protein) [Homo sapiens]	emb|CAB56526.1|	100%	2	454
HBJHY84	1013213	485	blastx.2	(AK000703) unnamed protein product [Homo sapiens]	dbj|BAA91330.1|	97%	3	653
HFIAS44	1013288	487	blastx.2	(AF124727) acinusS [Homo sapiens]	gb|AAD56725.1|	99% 100% 43% 38% 34% 28% 24% 26% 23% 30%	205 69 1186 1186 1168 1195 1183 1375 1313 1490	1605 203 1389 1407 1395 1605 1605 1653 1615 1675

						40%	1112	1207
HHAUD68	1013349	488	blastx.2	non-histone chromosomal protein [Homo sapiens]	gb|AAB53427.1|	100%	269	538
HEEAA89	1013436	489	blastx.2	(AF071172) HERC2 [Homo sapiens]	gb|AAD08657.1|	98% 100%	43 2	675 46
HNTAK22	1013524	490	blastx.2	(AF053944) aortic carboxypeptidase-like protein ACLP [Homo sapiens]	gb|AAC25585.1|	99% 34% 32% 27% 27% 25%	2 2 53 20 3 9	3175 853 853 763 305 341
HOVBX78	1013687	491	blastx.2	(AK001751) unnamed protein product [Homo sapiens]	dbj|BAA91882.1|	98% 88% 47%	281 633 649	637 707 750
HVVAW74	1013740	492	blastx.2	elongation factor 2 [Homo sapiens]	emb|CAA35829.1|	99% 90%	139 5	516 136
HSPSF84	1013853	493	blastx.2	heat shock protein [Drosophila melanogaster]	emb|CAA30276.1|	40%	165	440
HPAMV95	1014003	494	blastx.2	metalloproteinase inhibitor precursor [Homo sapiens]	gb|AAA59581.1|	100%	54	713
HOVBX22	1014041	495	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	60% 40% 63%	317 159 181	183 67 149
HPDRB63	1014204	496	blastx.2	zinc finger protein C2H2-25 [Homo sapiens]	gb|AAA93261.1|	60% 65% 59% 53%	2 2 2 2	781 646 679 766

						49%	47	766
						46%	50	775
						68%	2	313
						66%	2	232
HNHGJ66	1014252	497	blastx.2	fused-ccdB [Escherichia coli]	emb|CAA71575.1|	98%	2291	2467
HDPPN96	1014432	498	blastx.2	interferon-gamma induced protein [Homo sapiens]	gb|AAA58683.1|	99%	416	1741
						85%	1535	2434
						39%	1574	2413
						33%	536	1624
HPCTH41	1014485	499	blastx.2	(AB014888) MRJ [Homo sapiens]	dbj|BAA32209.1|	100%	168	890
						92%	1	123
HPCTY73	1014646	500	blastx.2	glycyl tRNA synthetase [Homo sapiens]	dbj|BAA06338.1|	100%	83	2299
HCOPQ33	1014730	501	blastx.2	SOX9 [Homo sapiens]	emb|CAA86598.1|	100%	3	380
HOEBR36	1014754	502	blastx.2	(AF180801) peroxisomal long chain acyl-CoA thioesterase Ib [Mus musculus]	gb|AAF13872.1|	73%	429	1061
						77%	176	352
						73%	9	167
						44%	352	480
HOEER36	1014869	504	blastx.2	(AF172066) retinoic acid repressible protein [Homo sapiens]	gb|AAD49745.1|AF172066_1	100%	75	794
HE8OX75	1015010	505	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	53%	328	158
						54%	246	112
						85%	110	48
HVASI06	1015024	506	blastx.2	(AK000178) unnamed protein product [Homo sapiens]	dbj|BAA90992.1|	100%	106	1086
						31%	619	1206
						96%	35	109
						100%	1083	1106

HDPXP07	1015059	507	blastx.2	(AK000370) unnamed protein product [Homo sapiens]	dbj|BAA91118.1|	64%	3	215
HE2KH02	1015093	508	blastx.2	(AL137756) hypothetical protein [Homo sapiens]	emb|CAB70908.1|	99%	1	615
HSPSI60	1015133	509	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	67%	5	319
HOCOC26	1015143	510	blastx.2	(AE001691) conserved hypothetical protein [Thermotoga maritima]	gb|AAD35130.1|AE001691_4	40% 41%	136 136	690 543
HHEDC05	1015204	511	blastx.2	Lipoprotein RlpA precursor. [Escherichia coli]	dbj|BAA35276.1|	98%	867	61
HODES86	1015304	512	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	57%	125	364
HOPJU57	1015324	513	blastx.2	SELENOPROTEIN W.	sp|O15532|SELW_HUMAN	98%	934	1164
HVCAC71	1015343	514	blastx.2	alcohol dehydrogenase class III [Homo sapiens]	gb|AAA51597.1|	99%	41	1204
HSXCO55	1015360	515	blastx.2	coronin-like protein [Schizosaccharomyces pombe]	emb|CAB11184.1|	33% 28% 30% 24% 30%	159 1258 2063 991 1533	971 1575 2428 1263 1736
HLWDB78	1015430	516	blastx.2	(AK001322) unnamed protein product [Homo	dbj|BAA91623.1|	95% 56%	30 613	602 681

				sapiens]					
HPCQU04	1015563	517	blastx.2	(AF093414) estrogen response element binding protein [Saguinus oedipus]	gb|AAC77437.1|	98% 73% 77% 30%	315 1232 1309 282		1232 1390 1362 518
HDPAT52	1015574	518	blastx.2	(AF056191) TPA inducible protein [Homo sapiens]	gb|AAC12944.1|	99% 42% 45% 38% 37% 37% 36% 34%	122 290 467 458 467 473 473 467		1054 1054 1018 1030 1030 1024 1024 1024
HAOSL81	1015620	519	blastx.2	P24 protein [Mus musculus]	dbj|BAA18947.1|	41% 32%	139 815		549 970
HMWIU46	1015814	520	blastx.2	(AF148457) heterogeneous nuclear ribonucleoprotein, alternate transcript [Homo sapiens]	gb|AAF04487.1|AF148457_1	99%	232		1152
HSXCQ19	1015994	521	blastx.2	(AC006486) BC85722_1 [Homo sapiens]	gb|AAD11988.1|	90% 37% 25% 29% 30% 28% 25% 47%	3 880 30 595 15 63 523 341		1175 1203 515 867 299 284 888 397
HNOAG06	1016272	522	blastx.2	(AF001947) U4/U6-associated RNA	gb|AAC09069.1|	100%	340		546

				splicing factor [Homo sapiens]				
HE2KN09	1016351	523	blastx.2	(AF095446) syndesmos [Gallus gallus]	gb|AAF29566.1|AF095446_1	75%	24	680
HISDH58	1016740	524	blastx.2	(AF060570) rig-1 protein [Mus musculus]	gb|AAD11628.1|	70% 65% 48%	69 55 1058	1313 210 1222
HSPSB62	1016768	525	blastx.2	(AB016533) nuclear protein containing a WW domain (Npw38) [Homo sapiens]	dbj|BAA76400.1|	100%	196	990
HE2FR37	1016939	526	blastx.2	(AF213393) ATP-binding cassette protein [Mus musculus]	gb|AAF31432.1|	73%	247	726
HBJHU33	1017051	527	blastx.2	(AK001775) unnamed protein product [Homo sapiens]	dbj|BAA91901.1|	99%	82	618
HCOQZ88	1017227	528	blastx.2	(AF027299) protein 4.1-G [Homo sapiens]	gb|AAC16923.1|	100% 47%	225 3	1196 722
HNTSV21	1017374	529	blastx.2	seryl-tRNA synthetase [Homo sapiens]	emb|CAA62635.1|	95% 90%	712 3	1008 32
HNORH33	1017461	530	blastx.2	(AJ132637) ATP-dependent metalloprotease YME1L [Homo sapiens]	emb|CAB51858.1|	99%	255	2063
HUFEF35	1017565	531	blastx.2	precursor polypeptide (AA -21 to 782) [Homo sapiens]	emb|CAA33261.1|	99% 100% 35%	303 2527 1083	2123 3048 1166

HJPCG39	1017694	532	blastx.2	(AF118078) PRO1848 [Homo sapiens]	gb|AAF22022.1|AF118094_17	65% 45%	17 142	139 240
HISBM03	1017772	533	blastx.2	(AF092576) translation initiation factor eIF3 p40 subunit; 1	gb|AAC84044.1|	100%	751	924
HOFAA79	1017801	534	blastx.2	(AF134404) delta-6 fatty acid desaturase [Homo sapiens]	gb|AAD31282.1|AF134404_1	88% 83%	14 505	532 885
HPRAJ96	1017825	535	blastx.2	growth-regulating protein [Homo sapiens]	gb|AAA18898.1|	100% 100%	690 653	824 685
HBXFX71	1018032	536	blastx.2	(AF071081) proline-rich mucin homolog [Mycobacterium tuberculosis]	gb|AAD41594.1|AF071081_1	32% 30%	1 1	597 633
HMVDD81	1018080	537	blastx.2	(AF161477) HSPC128 [Homo sapiens]	gb|AAF29092.1|AF161477_1	99%	23	745
HVVDH50	1018226	538	blastx.2	zyxin [Homo sapiens]	emb|CAA64447.1|	100% 100% 32% 21% 32% 45% 24%	143 1330 1303 662 134 1822 5	1327 1857 1455 1336 346 1914 295
HNNBT57	1018243	539	blastx.2	(AK000372) unnamed protein product [Homo sapiens]	dbj|BAA91120.1|	54% 28% 30%	194 355 363	45 230 244
HCONJ11	1018459	540	blastx.2	(AF083385) 30kDa splicing factor; SPF 30 [Homo sapiens]	gb|AAC64086.1|	100%	186	899
HCQAW6	1018501	541	blastx.2	(AK000010) unnamed	dbj|BAA90881.1|	100%	104	436

8			protein product [Homo sapiens]		100%	1198	1293
					96%	1381	1455
HVVCY25	1018772	542	blastx.2	almost identical to nRNP M protein, acc.L03532 [Homo sapiens]	emb|CAA50897.1|	98%	409	1059
						56%	418	792
						47%	394	711
						48%	418	810
HCOMB65	1018802	543	blastx.2	dJ68O2.2 (myosin, heavy polypeptide 9, non-muscle) [Homo sapiens]	emb|CAB05105.1|	99%	332	1204
						100%	1803	2600
						100%	1204	1800
						26%	1725	2486
						63%	19	246
						23%	332	1237
						23%	335	1243
						25%	341	1183
						23%	332	1156
						23%	1803	2588
						22%	332	1147
						22%	332	1195
						25%	332	1195
						23%	332	1201
						23%	299	1249
						22%	1734	2531
						23%	1204	1746
						27%	1207	1791
						21%	1219	1767
						22%	335	1198
						30%	1258	1788
						22%	1794	2588
						23%	491	1204
						19%	335	1237

1824	1291	23%				
1815	1285	25%				
470	138	40%				
1198	332	22%				
919	290	23%				
1800	1192	23%				
1246	338	22%				
1773	1219	18%				
1210	353	22%				
1791	1204	25%				
1788	1219	25%				
2435	1809	22%				
1249	320	23%				
2477	1806	23%				
1791	1204	26%				
2471	1806	23%				
2489	1809	18%				
1785	1207	21%				
1237	332	18%				
1794	1207	19%				
2486	1881	27%				
2480	1833	22%				
1800	1207	22%				
1872	1219	23%				
1788	1195	20%				
1776	1219	23%				
1785	1339	23%				
1800	1222	26%				
2462	1806	26%				
1800	1210	23%				

						22%	1204	1788
						23%	1237	1803
						18%	1189	1767
						25%	611	1183
						25%	1228	1473
						29%	1222	1440
						31%	1714	1800
						35%	67	228
						27%	1684	1803
						31%	115	237
						28%	61	216
						26%	67	225
						24%	258	401
						19%	34	234
						28%	249	344
						26%	1192	1305
HVVCF30	1018907	544	blastx.2	(AF010144) neuronal thread protein AD7c-NTP [Homo sapiens]	gb|AAC08737.1|	53%	121	387
						61%	118	294
						69%	149	295
						62%	3	131
						59%	284	349
						53%	42	128
						47%	282	380
HODBV21	1018943	545	blastx.2	(AC004537) similar to tumor suppressor p33ING1; similar to AF044076 (PID:g2829208) [Homo sapiens]	gb|AAC12956.1|	99%	151	861
HCHMD81	1019326	546	blastx.2	(AL023859) trna-	emb|CAA19575.1|	42%	733	945

				splicing endonuclease subunit [Schizosaccharomyces pombe]		29%	85	423
HAZAR95	1019338	547	blastx.2	phosphate carrier protein [Homo sapiens]	emb|CAA42641.1|	100%	110	1192
HMWFS51	1019409	548	blastx.2	(AB012223) ORF2 [Canis familiaris]	dbj|BAA25253.1|	41% 54% 42%	314 71 648	607 277 704
HE8SD82	1019585	549	blastx.2	(AL035494) dJ635G19.2.1 (novel protein (isoform 1)) [Homo sapiens]	emb|CAB44749.1|	99%	13	570
HSPSN08	1019608	550	blastx.2	(AF161491) HSPC142 [Homo sapiens]	gb|AAF29106.1|AF161491_1	100% 99%	134 918	919 1235
HVCAH24	1019749	551	blastx.2	(AC002394) Unknown gene product [Homo sapiens]	gb|AAC05810.1|	100%	103	468
HJPCF71	1019892	554	blastx.2	(AK000566) unnamed protein product [Homo sapiens]	dbj|BAA91259.1|	98%	234	830
HVCAE76	1019942	555	blastx.2	zinc finger protein [Rattus norvegicus]	emb|CAA42610.1|	48% 34% 50% 63%	576 72 1 89	2075 731 90 121
HOCMH14	1020007	556	blastx.2	(AL137618) hypothetical protein [Homo sapiens]	emb|CAB70844.1|	99% 78% 42%	298 1146 1871	1311 1730 1984
HPDRZ03	1020130	557	blastx.2	CCAAT-box DNA binding protein subunit	gb|AAA59930.1|	100%	131	751

HOCPO73	1020180	558	blastx.2	protein p84 [Homo sapiens]	gb|AAA53571.1|	93% 97% 100% 42% 37%	3646 3881 3993 1832 1888		2024 3636 3940 1758 1841
HNKDT10	1020832	559	blastx.2	(AF191018) E2IG3 [Homo sapiens]	gb|AAF09482.1|AF191018_1	99% 93%	77 426		436 569
HWHGO25	1020841	560	blastx.2	(AF090942) PRO0657 [Homo sapiens]	gb|AAF24054.1|AF090942_1	68%	3		137
HWMNE31	1020852	561	blastx.2	(AF083384) 45kDa splicing factor; SPF 45 [Homo sapiens]	gb|AAC64085.1|	98%	169		675
HUSYJ75	1020878	562	blastx.2	(AJ242540) hydroxyproline-rich glycoprotein DZ-HRGP [Volvox carteri f. nagariensis]	emb|CAB62280.1|	33% 35% 34% 32% 34% 32% 31% 32% 29% 31% 30% 28% 34% 31%	67 67 67 67 67 67 67 67 64 67 64 64 184 184		684 624 624 684 624 714 696 624 714 654 654 696 624 783
HSDFS07	1020904	563	blastx.2	(AL033534) hypothetical serine-rich secreted protein	emb|CAA22127.1|	27%	981		118

				[Schizosaccharomyces pombe]				
HCOPC09	1021208	564	blastx.2	(AJ245905) HSBP1-like protein [Chlorocebus aethiops]	emb|CAB55759.1|	95%	183	305
HVVBT22	1021323	565	blastx.2	hnRNP G protein [Homo sapiens]	emb|CAA80599.1|	100%	936	1649
HAMFW66	1021327	566	blastx.2	(AF075704) neuronal glutamine transporter [Rattus 1	gb|AAF34240.1|AF075704_1	89% 89% 100%	20 949 15	937 1227 53
HPMBW86	1021661	567	blastx.2	(AF129756) G4 [Homo sapiens]	gb|AAD18083.1|AAD18083	85%	3	614
HOFMK02	1021666	568	blastx.2	(AF038616) small tumor anitgen t-ag [Simian virus 40]	gb|AAC59341.1|	100%	159	230
HOUHK71	1021682	569	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	75%	429	268
HCOOW23	1021759	570	blastx.2	(AJ011376) hypothetical protein [Homo sapiens]	emb|CAB66159.1|	30%	210	689
HACMT02	1021794	571	blastx.2	ORF_o109 [Escherichia coli]	gb|AAA79814.1|	100%	209	3
HISDS67	1022018	572	blastx.2	(AK000633) unnamed protein product [Homo sapiens]	dbj|BAA91298.1|	60% 36% 43% 28% 24% 30% 38%	22 1139 1130 890 417 1277 1344	339 1318 1225 1327 950 1522 1484

						27%	1232	1372
						48%	590	682
						28%	1285	1455
						41%	1143	1193
HOVAA59	1022037	573	blastx.2	(AC002291) Similar ATP-dependent RNA Helicase [Arabidopsis thaliana]	gb|AAC00620.1|	59%	252	1319
						33%	1765	2421
						31%	1316	1585
						39%	1573	1770
						21%	1744	2211
						46%	1417	1506
						29%	1744	1917
						27%	1736	1966
						38%	1447	1536
						36%	1718	1813
HOCPL72	1022059	574	blastx.2	(AK001197) unnamed protein product [Homo sapiens]	dbj|BAA91548.1|	97%	38	1063
						92%	2402	2440
HCOMM05	1022082	575	blastx.2	epidermal growth factor receptor kinase substrate [Homo sapiens]	gb|AAA62280.1|	46%	445	840
						43%	115	435
						23%	43	222
HLYDC86	1022162	576	blastx.2	(AF015040) NUMB protein [Homo sapiens]	gb|AAD01548.1|	100%	3	836
						100%	839	1570
HTLEP21	1022167	577	blastx.2	(AF081280) nucleoplasmin-3 [Homo sapiens]	gb|AAC31609.1|	97%	101	445
						100%	33	95
HVCAS77	1022313	578	blastx.2	ribonuclease HI large subunit [Homo sapiens]	emb|CAB09725.1|	99%	176	1072
HSKJP93	1022663	580	blastx.2	(AL050022) hypothetical protein	emb|CAB43242.1|	100%	2	247

HAZAA64	1022719	581	blastx.2	predicted using Genefinder; Similarity to Prototheca 1 1 gene; cDNA EST yk386c1.3 comes from this gene; cDNA EST yk38 [Homo sapiens]	emb|CAA99938.1|	43%	304		705
HSEBD72	1022904	582	blastx.2	(AF044773) breakpoint cluster region protein 1 [Homo sapiens]	gb|AAC08964.1|	89%	164		580
HDPYE27	1022911	583	blastx.2	(AF062346) zinc finger protein 216 splice variant 1 [Homo sapiens]	gb|AAC42601.1|	100%	428		1066
HCRQL51	1022997	584	blastx.2	PEG1/MEST [Homo sapiens]	emb|CAA72297.1|	100%	50		1030
HDTCC55	1023046	585	blastx.2	(AL117483) hypothetical protein [Homo sapiens]	emb|CAB55956.1|	33% 35% 42%	306 4 105		533 105 182
HOOJQ91	1023049	586	blastx.2	envelope protein [Homo sapiens]	gb|AAA88027.1|	63%	3		530
HCE4K28	1023227	587	blastx.2	(AF021792) Bcl-X/Bcl-2 binding protein [Homo sapiens]	gb|AAB72092.1|	98%	262		750
HPDVY62	1023264	588	blastx.2	DOCK180 protein [Homo sapiens]	dbj|BAA09454.1|	99%	2		1126
HLHDK42	1023339	589	blastx.2	modifier 2 [Mus musculus]	emb|CAA40012.1|	61% 85%	58 3		300 62
HLDRQ55	1023375	590	blastx.2	coiled-coil like protein	gb|AAB61902.1|	98%	5		388

				1 [Mus musculus]				
HVVBI06	1023414	591	blastx.2	(AF064603) GA17 protein [Homo sapiens]	gb|AAC17108.1|	97% 96%	93 1359	647 637
HOCME51	1023422	592	blastx.2	(AK001103) unnamed protein product [Homo sapiens]	dbj|BAA91503.1|	98% 96% 97%	14 319 498	313 492 623
HPDOP74	1023531	593	blastx.2	(AF104670) cell cycle protein [Homo sapiens]	gb|AAD05561.1|	100%	173	1354
HMSOH12	1023545	594	blastx.2	chaperonin-like protein [Homo sapiens]	gb|AAA61061.1|	100%	1	1077
HOPJG50	1023584	595	blastx.2	ribosomal protein L34 [Homo sapiens]	gb|AAC41916.1|	97%	157	507
HDUAB04	1023585	596	blastx.2	ribosomal protein L34 [Homo sapiens]	gb|AAC41916.1|	97%	21	371
HVCAA38	1023632	597	blastx.2	TREB protein [Homo sapiens]	emb|CAA39149.1|	100%	36	818
HIBCN87	1023837	598	blastx.2	(AF006264) recombination and sister chromatid cohesion protein homolog [Homo sapiens]	gb|AAD01193.1|	96% 92% 79% 100% 67% 28% 33% 40% 38% 36% 35%	1 1160 1332 1582 969 88 202 250 1169 331 969	1017 1300 1478 1665 1070 972 471 417 1315 510 1028
HPCOM04	1024000	599	blastx.2	vacuolar H+ ATPase E subunit [Homo sapiens]	emb|CAA53814.1|	100%	141	818

HPAME01	1024332	601	blastx.2	(AL109978) hypothetical protein [Homo sapiens]	emb|CAB53376.1|	98%	804	1061
HTTJS76	1024472	602	blastx.2	N-WASP [Homo sapiens]	dbj|BAA20128.1|	97% 68%	3 6	392 44
HCORI57	1024556	603	blastx.2	39 kDa encoded by N33 [Homo sapiens]	gb|AAB18374.1|	97% 57%	200 198	1231 275
HNORG50	1024624	604	blastx.2	(AF006084) p41-Arc [Homo sapiens]	gb|AAB64189.1|	98% 66%	62 1029	1027 1112
HWLVR07	1024915	605	blastx.2	(AL050273) hypothetical protein [Homo sapiens]	emb|CAB43374.1|	100%	203	517
HOPKF60	1025047	606	blastx.2	(AJ249366) epsilon-COP protein [Homo sapiens]	emb|CAB55628.1|	100%	48	971
HBDAD74	1025102	607	blastx.2	(AL031640) /prediction=(method:"" genscan"", version:""1.0"", 1 1 1 target:SPTREMBL::O6 087	emb|CAA21052.1|	39%	2	403
HPCTY12	1025231	608	blastx.2	(AB015597) hTIM1 [Homo sapiens]	dbj|BAA36499.1|	96%	68	1225
HFASF12	1025327	609	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	64%	251	3
HLIBM71	1025359	610	blastx.2	(AF110776) adrenal gland protein AD-003 [Homo sapiens]	gb|AAF14859.1|AF1 10776_1	98% 100%	183 512	512 766

HNOKW27	1025366	611	blastx.2	F35C11.4 [Caenorhabditis elegans]	emb|CAA90244.1|	30% 31%	162 743	632 1060
HPFDG48	1025526	612	blastx.2	(AF083242) HSPC024-iso [Homo sapiens]	gb|AAD39840.1|	88% 90%	313 564	387 623
HVVBF24	1025712	613	blastx.2	TRAM protein [Homo sapiens]	emb|CAA45218.1|	100%	175	1296
HE8UF88	1025745	614	blastx.2	retinoblastoma-binding protein mRbAp48 [Mus musculus]	gb|AAC52275.1|	96% 40%	124 1391	1473 1495
HOUBC29	1025749	615	blastx.2	GTP-binding protein (rab2) [Canis familiaris]	gb|AAA30888.1|	100%	444	719
HOCPY47	1025965	616	blastx.2	(AF055010) unknown [Homo sapiens]	gb|AAC09360.1|	99% 92%	1567 1337	2760 1594
HOVKE20	1025990	617	blastx.2	follistatin-related protein FLRG [Homo sapiens]	gb|AAC64321.1|	100%	36	824
HODBK27	1026372	619	blastx.2	(AF054284) spliceosomal protein SAP 155 [Homo sapiens]	gb|AAC97189.1|	100%	123	497
HE8CH59	1026805	620	blastx.2	(AK001093) unnamed protein product [Homo sapiens]	dbj|BAA91500.1|	100% 100% 31% 36%	1913 1654 1994 2405	2632 1848 2689 2755
HSKGR52	1026911	621	blastx	putative glycosyl transferase [Schizosaccharomyces pombe]	emb|CAB10854.1|	55% 76% 42% 40%	488 389 272 92	616 439 376 202

HMUAQ05	1026913	622	blastx.2	(AF151825) CGI-67 protein [Homo sapiens]	gb|AAD34062.1|AF151825_1	74%	54	524
HCOMA45	1026979	623	blastx.2	(AF113685) PRO0974 [Homo sapiens]	gb|AAF29584.1|AF113685_1	51% 66%	557 601	378 566
HE2KI45	1027007	624	blastx.2	(AF161553) HSPC068 [Homo sapiens]	gb|AAF29040.1|AF161553_1	99%	6	1565
HODDO66	1027207	625	blastx.2	S-adenosylmethionine synthetase [Homo sapiens]	emb|CAA48726.1|	78% 94% 52%	35 865 7	241 975 63
HVVAT45	1027269	626	blastx.2	(AF102265) N-acetylglucosamine-phosphate mutase [Homo sapiens]	gb|AAC72409.1|	100% 100%	275 74	1117 277
HVCAG18	1027484	627	blastx.2	(AL031663) dJ461P17.6 (Major Epididymis-specific protein E4 1 1 sapiens]	emb|CAB37641.1|	100%	22	393
HPTXK72	1027486	628	blastx.2	(AL031663) dJ461P17.6 (Major Epididymis-specific protein E4 1 1 sapiens]	emb|CAB37641.1|	100%	91	462
HDTLR06	1029191	630	blastx.2	(AF132552) BcDNA.GM01838 [Drosophila melanogaster]	gb|AAD27851.1|AF132552_1	73%	123	1004
HPAMG11	1029484	631	blastx.2	BB1=malignant cell expression-enhanced gene/tumor 1 line, Peptide, 342 aa] [Homo sapiens]	gb|AAB37433.1|	99%	2	667

HSDJR27	1030870	632	blastx.2	(AL137520) hypothetical protein [Homo sapiens]	emb|CAB70786.1|	100%	52	1176
HOCPL33	1030871	633	blastx.2	extensin [Volvox carteri]	emb|CAA46283.1|	32% 35% 33% 32% 45% 34% 48% 36%	1097 1037 1040 1094 1747 1735 566 74	1516 1429 1420 1429 1899 1881 640 130
HPCQN80	1030963	634	blastx.2	ha1025 is new [Homo sapiens]	dbj|BAA07552.1|	99% 96%	95 1	2158 96
HODFZ16	1031085	636	blastx.2	(AB033168) nuclear protein ZAP [Mus musculus]	dbj|BAA85182.1|	86%	349	462
HWGAE28	1031316	637	blastx.2	member of DEAD box protein family [Homo sapiens]	emb|CAA49992.1|	99%	52	2271
HOFNZ21	1031328	638	blastx.2	valosin-containing protein [Sus scrofa]	gb|AAA31142.1|	65%	259	423
HOOKH25	1031329	639	blastx.2	(AC004472) TERA_HUMAN [Homo sapiens]	gb|AAC07984.1|	100%	279	2696
HDTIL75	1031435	640	blastx.2	(AK000031) unnamed protein product [Homo sapiens]	dbj|BAA90894.1|	99%	22	1092

HPRSB55	1031451	641	blastx.2	(AF168418) activating signal cointegrator 1 [Homo sapiens]	gb|AAF01278.1|	99%	9	1751
HPDPY36	1031606	642	blastx.2	(AF125182) single-strand selective monofunctional uracil DNA glycosylase [Homo sapiens]	gb|AAD17301.1|	100%	512	631
HETFJ47	1031922	643	blastx.2	(AF020797) AP-mu chain family member mu1B [Homo sapiens]	gb|AAD25870.1|AF020797_1	99%	60	1328
HMAMI21	1031988	644	blastx.2	hypothetical protein Rv0712 [Mycobacterium tuberculosis]	emb|CAB06436.1|	41%	365	1204
HCOQQ85	1032475	645	blastx.2	S100 calcium-binding protein A13 (S100A13) [Homo sapiens]	emb|CAA68188.1|	100%	379	672
HE2DQ62	1033653	646	blastx.2	putative T1/ST2 receptor binding protein precursor [Homo sapiens]	gb|AAC50419.1|	98%	105	785
HEBAE89	1034320	647	blastx.2	(AK000264) unnamed protein product [Homo sapiens]	dbj|BAA91040.1|	97%	260	400
HKDBF43	1034471	648	blastx.2	(AL049705) hypothetical protein [Homo sapiens]	emb|CAB41269.1|	100%	48	431
HVVCT43	1034539	649	blastx.2	novel ORF [Homo sapiens]	gb|AAB72234.1|	91% 100%	700 633	801 698

						91%	806	841
HTTDR30	1035435	650	blastx.2	(AF214634) polyA binding protein [Homo sapiens]	gb|AAF19993.1|AF214634_1	48%	693	986
HODGO46	1035602	651	blastx.2	unknown protein [Homo sapiens]	gb|AAA88036.1|	38%	468	115
HNTTB23	1035988	652	blastx.2	(AJ246001) spastin protein [Homo sapiens]	emb|CAB60141.1|	99%	93	974
HVVBV73	1036583	653	blastx.2	(AF013249) leukocyte-associated Ig-like receptor-1 [Homo 1	gb|AAB69324.1|	100%	439	1299
HTEPV42	1036973	655	blastx.2	(AK001738) unnamed protein product [Homo sapiens]	dbj|BAA91872.1|	99%	1	435
HFTCG52	1037108	656	blastx.2	(AF117723) seed maturation protein PM27 [Glycine max]	gb|AAD30426.1|AF117723_1	30%	286	786
HKAOB40	1037131	657	blastx.2	predicted using Genefinder; Similarity to Drosophila RNA 1 this gene [Caenorhabditis elegans]	emb|CAB01127.1|	32%	73	357

HPDVE37	1037303	658	blastx.2	cathepsin C [Homo sapiens]	emb|CAA60671.1|	100%	118	885
HTLES74	1037438	659	blastx.2	GAP-associated protein p190 - rat	pir|A38218|A38218	74% 56% 63% 41%	50 681 15 43	811 875 152 171
HCORG51	1037480	660	blastx.2	ubiquitin-like protein [Bos taurus]	gb|AAB49682.1|	100%	150	434
HPAMM72	1038344	661	blastx.2	nucleoside-diphosphate kinase [Homo sapiens]	emb|CAA68877.1|	99%	44	520
HKZAT03	1038378	662	blastx.2	endothelial cell growth factor [Homo sapiens]	gb|AAA60043.1|	100%	114	1559
HDQMA85	1038717	663	blastx.2	glutathione S-transferase [Homo sapiens]	gb|AAA35934.1|	100% 100%	234 110	356 235
HVCCQ82	1038718	664	blastx.2	glutathione S-transferase [Homo sapiens]	gb|AAA35934.1|	100%	114	578
HTGFP54	1038915	665	blastx.2	(AL080156) hypothetical protein [Homo sapiens]	emb|CAB45747.1|	94%	415	525
HBODF41	1039017	666	blastx.2	beta-spectrin [Homo sapiens]	gb|AAA60580.1|	99% 20% 21% 22% 19% 22% 60%	1 7 28 16 1 184 2127	2172 2091 2151 2187 2118 2193 2351
HPAMC60	1039290	668	blastx.2	TRAF4-associated factor 2 [Homo	gb|AAD24202.1|U83194_1	100%	31	1242

				sapiens]					
HLMHM83	1039491	669	blastx.2	(AK001123) unnamed protein product [Homo sapiens]	dbj|BAA91513.1|	44%	158	616
HOUDK70	1039538	670	blastx.2	(AF091083) unknown [Homo sapiens]	gb|AAC72952.1|	100%	285	1142
HMEFK29	1039652	672	blastx.2	(AC002398) F25965_1 [Homo sapiens]	gb|AAB81199.1|	54% 100%	808 1	993 48
HAOSK79	1039663	673	blastx.2	(AJ223953) hPTTG [Homo sapiens]	emb|CAA11683.1|	100%	54	659
HPDRV42	1039689	674	blastx.2	P58 [Homo sapiens]	gb|AAC50331.1|	100%	135	1649
HOPJD35	1039703	675	blastx.2	(AF035262) BAF57 [Homo sapiens]	gb|AAC04509.1|	100%	121	1353
HTFNP84	1039748	676	blastx.2	ect2 [Mus musculus]	gb|AAA37536.1|	94% 42%	73 27	1227 125
HTHDT76	1039871	677	blastx.2	(AL117404) hypothetical protein [Homo sapiens]	emb|CAB55905.1|	98%	7	564
HSYEC21	1039891	678	blastx.2	adenosine triphosphatase [Homo sapiens]	gb|AAA35999.1|	99% 96% 37%	432 1 3819	2372 435 3890
HKGCO25	1040384	679	blastx.2	NAP [Homo sapiens]	gb|AAC37544.1|	99%	3	665
HNOJN70	1040385	680	blastx.2	(AF062594) nucleosome assembly protein [Rattus norvegicus]	gb|AAC67388.1|	100%	297	425
HADFS31	1040388	681	blastx.2	(AF214680) C3HC4-like zinc finger protein [Homo sapiens]	gb|AAF30180.1|	88% 92%	449 145	832 504

HJBDC89	1040569	682	blastx.2	nonhepatic arginase [Homo sapiens]	dbj|BAA13158.1|	100% 97%	113 651	661 1175
HTAIX75	1040591	683	blastx.2	(AK000897) unnamed protein product [Homo sapiens]	dbj|BAA91413.1|	47%	303	557
HODBO29	1040620	684	blastx.2	thioesterase II [Homo sapiens]	emb|CAA60024.1|	63%	84	527
HOCOF27	1040631	685	blastx.2	zinc-finger helicase [Homo sapiens]	gb|AAC39923.1|	91%	277	687
HSPSE88	1040694	686	blastx.2	tumor susceptibility protein [Homo sapiens]	gb|AAC52083.1|	100% 52%	110 68	922 175
HSKXM78	1040826	687	blastx.2	(AK001550) unnamed protein product [Homo sapiens]	dbj|BAA91751.1|	63% 75% 31%	1 108 505	654 398 618
HNLMB92	1040913	688	blastx.2	protein of unknown function [Homo sapiens]	gb|AAA63232.1|	96%	355	666
HE8ON57	1040925	689	blastx.2	(AF005855) anon2A5 [Drosophila melanogaster]	gb|AAB81486.1|	26%	50	415
HOCOC14	1040932	690	blastx.2	protein antigen [synthetic construct]	emb|CAA01182.1|	100%	539	1384
HOGDP49	1041049	691	blastx.2	bcn92 [Drosophila subobscura]	emb|CAB55311.1|	55%	226	474
HOFMK22	1041070	692	blastx.2	(AF161479) HSPC130 [Homo sapiens]	gb|AAF29094.1|AF161479_1	94%	3	356
HBGNT69	1041900	693	blastx.2	NF-AT3 gene product [Homo sapiens]	gb|AAA79175.1|	100% 71% 39%	111 3 421	428 212 612

						40%	455	586
HSPSI42	1042462	694	blastx.2	ubiquitin-activating enzyme E1 [Homo sapiens]	gb|AAA61246.1|	100%	259	3432
HPDQD23	1042649	695	blastx.2	(AF055470) ZNF258 [Homo sapiens]	gb|AAD15797.1|	65%	174	338
HWMBA10	1042859	696	blastx.2	Mel-18 protein [Homo sapiens]	dbj|BAA03074.1|	95%	2717	2256
HETKL27	1042951	698	blastx.2	unknown [Homo sapiens]	gb|AAA76738.1|	40%	188	637
HPCTH04	1043273	699	blastx.2	ATL-derived factor/thioredoxin [Homo sapiens]	emb|CAA54687.1|	100%	180	494
HVVBM94	1043532	701	blastx.2	pre-pump-1 proteinase (AA -17 to 250) [Homo sapiens]	emb|CAA30678.1|	100%	52	852
HVVBC43	1043553	702	blastx.2	(AB000468) zinc finger protein [Homo sapiens]	dbj|BAA19122.1|	100%	301	870
HTPDM31	1044199	703	blastx.2	proline-rich protein MP2 - mouse (fragment)	pir|A24264|A24264	31% 34% 33% 34% 53% 39% 39% 39%	632 584 632 620 742 790 790 790	48 51 138 225 659 659 659 659

						41% 38%	790 790	662 662
HSQEK12	1044577	704	blastx.2	similar to Human Sp2 protein (M97190) [Homo sapiens]	dbj|BAA05923.1|	89% 48%	53 1	439 93
HPDRZ16	1044618	705	blastx.2	(AF106473) leucine-rich-domain inter-acting protein 1; LeR 1	gb|AAD17989.1|	72%	424	834
HVCBC44	1044635	706	blastx	CTP synthetase homolog [Mus musculus]	gb|AAB17729.1|	77%	3	896
HPIAC22	1044711	707	blastx.2	D-E-A-D box protein [Drosophila melanogaster]	gb|AAC14192.1|	42% 47%	749 20	1738 493
HSODA53	1044741	708	blastx.2	(AF213393) ATP-binding cassette protein [Mus musculus]	gb|AAF31432.1|	68% 73%	1316 1101	1657 1319
HE9ML74	1044760	709	blastx.2	coded for by C. elegans cDNA yk34b1.5; coded for by C. elegans 1 1 coded for by C. elegans cDNA yk46e8.3; coded fo	gb|AAB00699.1|	77% 41% 52% 21% 31%	940 465 6 315 450	1269 932 260 614 593
HPDRB76	1044762	710	blastx.2	adenylate kinase 2B [Homo sapiens]	gb|AAC13881.1|	100%	160	855
HSYDI55	1044769	711	blastx.2	(AF151819) CGI-61 protein [Homo sapiens]	gb|AAD34056.1|AF151819_1	100% 97%	309 1067	1067 1174
HOGCI31	1044821	712	blastx.2	(AL110271) hypothetical protein [Homo sapiens]	emb|CAB53709.1|	96%	34	558

HNOKX86	1044893	713	blastx.2	(AF092138) HSPC033 [Homo sapiens]	gb|AAD40380.1|	100%	303	575
HTPHG81	1045117	714	blastx.2	(AL117402) hypothetical protein [Homo sapiens]	emb|CAB55903.1|	100%	537	1538
HPCTV49	1045379	715	blastx.2	ribosomal protein [Homo sapiens]	gb|AAA36589.1|	100%	127	444
HHGDK68	1045464	716	blastx.2	(AL020993) dJ5O6.1 (casein kinase 1, epsilon) [Homo sapiens]	emb|CAA15888.1|	89% 100%	124 765	858 1013
HNOKM38	1045500	717	blastx.2	transducin (beta) like 1 protein [Homo sapiens]	emb|CAA73319.1|	99%	120	1640
HHFUN47	1045842	718	blastx.2	(AF099028) putative transmembrane protein cmp44E [Drosophila melanogaster]	gb|AAD12254.1|	49% 52% 27% 83%	2 2 1007 865	1135 952 2368 882
HE9EJ82	1046856	722	blastx.2	beta-signal sequence receptor [Homo sapiens]	dbj|BAA07206.1|	96%	24	173
HODHS68	1047137	724	blastx.2	(AK000826) unnamed protein product [Homo	dbj|BAA91390.1|	99%	528	1220

				sapiens]				
HOPKT59	1047169	725	blastx.2	p23 [Homo sapiens]	gb|AAA18537.1|	100%	335	814
HMCFK45	1047212	726	blastx.2	(AF182844) VPS28 protein [Homo sapiens]	gb|AAF00499.1|AF182844_1	100%	124	786
HPIAN63	1047381	727	blastx.2	(AF011792) cell cycle progression 2 protein [Homo sapiens]	gb|AAB69312.1|	100% 94% 78% 26% 38% 30%	206 586 770 107 762 589	586 786 892 505 935 687
HNSME49	1047403	728	blastx.2	predicted using Genefinder [Caenorhabditis elegans]	emb|CAB04731.1|	55%	114	554
HWEAC64	1047473	729	blastx.2	ORF X (AA 1 - 393) [Escherichia coli]	emb|CAA31134.1|	98%	167	700
HOCQI51	1047483	730	blastx.2	(AB034912) WD-repeat like sequence [Homo sapiens]	dbj|BAA92312.1|	99% 96% 46% 46%	99 967 939 1081	1004 1479 977 1119
HOPKE15	1047634	731	blastx.2	putative RNA-binding protein [Schizosaccharomyces pombe]	emb|CAB11047.1|	36% 30%	509 141	1432 401
HMAEL73	1047646	732	blastx.2	(AL157427) hypothetical protein [Homo sapiens]	emb|CAB75652.1|	100%	754	2463
HNOKE42	1047663	733	blastx.2	(AF116272) T-cell activation protein [Homo sapiens]	gb|AAD38498.1|AF116272_1	100%	65	445

HOFAE31	1047670	734	blastx.2	ubiquinol--cytochrome-c reductase (EC 1.10.2.2) 11K protein - bovine	pir|A00119|CCBO11	93% 92%	2 180	181 221
HNOAC93	1047820	736	blastx.2	(AB016092) RNA binding protein [Homo sapiens]	dbj|BAA83718.1|	100%	69	305
HMEJA45	1047848	737	blastx.2	(AF091242) ATP sulfurylase/APS kinase 2 [Homo sapiens]	gb|AAC64583.1|	87%	166	399
HLDAS11	1047937	738	blastx.2	Similar to Human C219-reactive peptide (L34688) [Homo sapiens]	dbj|BAA13448.1|	99% 91% 32%	233 52 503	958 249 907
HWMJB31	1048009	739	blastx.2	DARPP-32=DOPAMINE AND CAMP-REGULATED PHOSPHOPROTEIN.	sp|G545790|G545790	94%	169	729
HAZAA31	1048188	740	blastx.2	transketolase [Homo sapiens]	gb|AAA98961.1|	100% 76%	778 92	1959 1033
HOCMC83	1048300	741	blastx.2	hypothetical protein [Schizosaccharomyces pombe]	emb|CAB11599.1|	30%	446	1279
HCFCS40	1048427	742	blastx.2	(AK001123) unnamed protein product [Homo sapiens]	dbj|BAA91513.1|	46%	17	1231
HVCAA65	1048595	743	blastx.2	(AF022815) proteasome subunit XAPC7 [Homo sapiens]	gb|AAB81515.1|	100%	191	934

HSPSI76	1048635	744	blastx.2	prolyl 4-hydroxylase alpha (II) subunit [Homo sapiens]	gb|AAB71339.1|	99%	208	1578
HVVCH35	1048658	745	blastx.2	(AF177385) cytochrome c oxidase assembly protein isoform 2 [Homo sapiens]	gb|AAF05313.1|AF177385_1	99%	436	1233
HOFNI66	1048739	746	blastx.2	signal peptidase complex 25 kDa subunit [Canis familiaris]	gb|AAA21254.1|	95%	33	710
HMSKI90	1048792	747	blastx.2	unknown protein [Homo sapiens]	gb|AAA88038.1|	39% 28% 45% 100%	3258 1452 2039 327	2377 1180 1944 310
HSYBI49	1049151	748	blastx.2	(AF101051) senescence-associated epithelial membrane protein [Homo sapiens]	gb|AAD16433.1|	100%	173	805
HTXSN37	1049372	749	blastx.2	(AL080159) hypothetical protein [Homo sapiens]	emb|CAB45750.1|	47% 46%	1154 408	1861 530
HMUBT31	1049466	750	blastx.2	serine palmitoyltransferase, subunit I [Homo sapiens]	emb|CAA69941.1|	100%	11	1429
HFPDO90	1049644	751	blastx.2	Similarity to yeast hypothetical protein PIR accession number	emb|CAA94801.1|	100%	516	611

				1 1 this gene; cDNA EST yk504c7.3 comes from this gene; cDN				
HVVCB79	1050102	752	blastx.2	urokinase [synthetic construct]	emb|CAA00829.1|	95% 96%	213 1067	1139 1504
HDPGR19	1050167	753	blastx.2	(AL031733) dJ455J7.1 (cellular repressor of E1A-stimulated genes CREG) [Homo sapiens]	emb|CAB42866.1|	100%	11	670
HVVDX63	1050256	754	blastx.2	interferon regulatory factor 1 [Homo sapiens]	gb|AAA36043.1|	100%	212	1186
HNOJA87	1050282	755	blastx.2	NUCLEAR FACTOR ERYTHROID 2 RELATED FACTOR 2 (NF-E2 1 ERYTHROID DERIVED 2, LIKE 2) (HEBP1).	sp|Q16236|NFL2_HUMAN	99%	643	2415
HTPGI65	1050419	756	blastx.2	ESX [Homo sapiens]	gb|AAB58075.1|	100%	161	1273
HHFGN14	1050536	757	blastx.2	DNA binding protein [Homo sapiens]	dbj|BAA08565.1|	99% 97% 53% 31% 32% 40% 28% 46%	1818 405 121 203 465 3017 1464 2939	2738 995 810 421 833 3136 1784 2983
HTAIN76	1050553	758	blastx.2	(AF016903) agrin precursor [Homo	gb|AAC39776.1|	98% 96%	371 3	1300 416

				sapiens]		36%	614	1252
						32%	614	1291
						45%	3	416
						31%	3	440
						38%	386	721
						40%	426	557
						26%	98	430
						32%	465	665
						35%	19	198
						27%	1125	1331
						58%	3	38
						40%	541	648
						58%	155	196
HLYBO89	1050702	759	blastx.2	caltractin [Homo sapiens]	emb|CAA51467.1|	100%	42	557
HMEKJ82	1050767	760	blastx.2	serine/threonine protein kinase Krs-1 [Homo sapiens]	gb|AAB17261.1|	95%	196	597
HOFNX17	1050969	761	blastx.2	annexin I [Oryctolagus cuniculus]	gb|AAC78495.1|	91%	188	574
						45%	571	672
HAOSY21	1051095	762	blastx.2	(AF151048) HSPC214 [Homo sapiens]	gb|AAF36134.1|AF151048_1	85%	174	569
HMWDB39	1051115	763	blastx.2	V-1 protein [Rattus norvegicus]	dbj|BAA05167.1|	99%	245	598
HAOSZ53	1051246	764	blastx.2	(AF028823) Tax interaction protein 1 [Homo sapiens]	gb|AAB84248.1|	100%	56	403
HSODP14	1051256	765	blastx.2	p0071 protein [Homo sapiens]	emb|CAA57478.1|	82%	244	522
						96%	53	247
						53%	385	624

						39% 34% 43%	452 187 84	580 300 152
HWLXZ72	1051319	766	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	64% 77%	413 886	159 860
HUSGQ45	1051410	767	blastx.2	(AK000101) unnamed protein product [Homo sapiens]	dbj|BAA90946.1|	100% 37%	18 246	527 539
HLDRA54	1051437	768	blastx.2	cellular nucleic acid binding protein [Mus musculus]	gb|AAB60490.1|	100% 86% 51% 51% 38%	362 175 365 353 365	676 360 661 598 658
HNOJR48	1051533	769	blastx.2	(AJ251914) putative RNA helicase [Sus scrofa]	emb|CAB63856.1|	100%	94	1377
HKIXH35	1051883	770	blastx.2	Huntington Disease (HD) gene exon 1 [Homo sapiens]	emb|CAA92991.1|	65% 47% 40% 56% 42%	5 3194 640 2905 607	82 3250 705 2952 669
HHEBJ92	1051903	771	blastx.2	mannitol permease [Escherichia coli]	emb|CAA24748.1|	100%	184	2094
HPTGB84	1051953	772	blastx.2	(AF151871) CGI-113 protein [Homo sapiens]	gb|AAD34108.1|AF151871_1	100%	93	668
HVCCD05	1051983	773	blastx.2	neurofibromin [Homo sapiens]	gb|AAA59925.1|	96%	18	968
HPYSC40	1052158	774	blastx.2	(AL050169) hypothetical protein	emb|CAB43305.1|	100%	20	583

				[Homo sapiens]				
HDDMT56	1052261	775	blastx.2	(AF110775) adrenal gland protein AD-002 [Homo sapiens]	gb|AAF14858.1|AF110775_1	100%	158	844
HVVAW02	1052553	776	blastx.2	sorcin CP-22 [Homo sapiens]	gb|AAA60588.1|	100%	59	652
HOGCS42	1052557	777	blastx.2	(AB000712) CPE-receptor [Homo sapiens]	dbj|BAA22984.1|	100%	226	852
HAZAA59	1052593	778	blastx.2	CUG-BP/hNab50 [Homo sapiens]	gb|AAC50895.1|	90%	50	745
HMALJ21	1052874	780	blastx.2	(AC002397) C9 [Mus musculus]	gb|AAC36017.1|	52% 49% 40%	632 243 1826	1033 650 1915
HLYAR61	1053037	781	blastx.2	nuclear protein essential for dosage compensation [Caenorhabditis elegans]	gb|AAA92286.1|	64%	282	431
HLTCQ80	1053164	782	blastx.2	(AF064801) multiple membrane spanning receptor TRC8 [Homo sapiens]	gb|AAC39930.1|	87%	2	622
HDTDU67	1053171	783	blastx.2	54k protein (AA 1-504) [Canis familiaris]	emb|CAA34385.1|	100%	512	697
HMABL01	1053173	784	blastx.2	(AK001782) unnamed protein product [Homo sapiens]	dbj|BAA91907.1|	100%	609	1289

HACMU05	1053236	785	blastx.2	(AB002405) LAK-4p [Homo sapiens]	dbj|BAA24179.2|	99% 100% 60%	1804 1301 815	2631 1813 889
HOVDF79	1053369	786	blastx.2	pumilio protein [Drosophila melanogaster]	gb|AAB59189.1|	66% 28% 27%	39 42 42	653 518 521
HVVBJ54	1053547	787	blastx.2	CIRP [Homo sapiens]	dbj|BAA11212.1|	100%	95	610
HOFMU50	1053548	788	blastx.2	heparan sulfate 2-sulfotransferase [Cricetulus longicaudatus]	dbj|BAA20422.1|	90%	374	532
HE9MO38	1053585	789	blastx.2	phosphoenolpyruvate carboxykinase (GTP) [Homo sapiens]	emb|CAA72272.1|	100% 48% 53%	77 486 387	220 587 431
HOPJF55	1053725	790	blastx.2	microfibril-associated glycoprotein [Homo sapiens]	gb|AAA79920.1|	100%	150	698
HAOTD13	1053746	791	blastx.2	casein kinase-II beta [Oryctolagus cuniculus]	gb|AAA91892.1|	100%	164	808

HOCPT34	1053973	793	blastx.2	p0071 protein [Homo sapiens]	emb|CAA57478.1|	98%	1	2334
HFKHC64	1054015	794	blastx.2	(AF058448) herpesvirus entry protein B [Homo sapiens]	gb|AAC23797.1|	99%	178	1614
HOPKO37	1054085	795	blastx.2	drebrin E2 [Homo sapiens]	gb|AAA16256.1|	99%	2	1063
HNBVO53	1054122	796	blastx.2	p160 [Homo sapiens]	gb|AAC17708.1|	89% 46% 31% 36% 90% 31% 37%	50 639 1871 883 36 754 952	2332 1403 2380 1119 68 1101 1173
HCQDQ11	1054196	798	blastx.2	cytochrome c oxidase subunit 3 [Homo sapiens]	dbj|BAA77671.1|	93%	25	777
HTFML39	1054230	799	blastx.2	secreted cyclophilin-like protein [Homo sapiens]	gb|AAA36601.1|	100%	226	873
HOGCR32	1054235	800	blastx.2	similar to mouse CC1. [Homo sapiens]	dbj|BAA13194.1|	90% 62% 35%	15 160 128	110 204 169
HFCDL60	1054288	801	blastx.2	(AF005038) secretory carrier membrane protein [Homo sapiens]	gb|AAB62723.2|	99% 66%	152 2	919 46
HODEC13	1054400	802	blastx.2	(AC007059) Human homolog of Mus musculus wizL protein	gb|AAD19818.1|	87%	3	722

				[AA 4-1561] [Homo sapiens]				
HUSYA18	1054451	803	blastx.2	DNA/RNA-binding protein [Homo sapiens]	gb|AAA75623.1|	89% 28% 76% 39% 47%	35 161 1 591 3	553 484 39 689 59
HOCON42	1054527	804	blastx.2	DYNAMIN 2.	sp|P50570|DYN2_HUMAN	95% 74% 30% 28% 38%	545 162 1276 1666 2190	1588 734 1638 1914 2246
HKMNH37	1054550	805	blastx.2	(AL031115) ZXDA, ZXDB (zinc finger X-linked protein) [Homo sapiens]	emb|CAB36858.1|	50%	37	720
HPDWP21	1054662	806	blastx.2	(AF178534) talin [Homo sapiens]	gb|AAF27330.1|	99% 78%	63 35	797 76
HOGCS52	1054677	807	blastx.2	(AJ245621) CTL2 protein [Homo sapiens]	emb|CAB75542.1|	99%	36	1388
HWMCK60	1054751	808	blastx.2	(AF125099) HSPC038 protein [Homo sapiens]	gb|AAD39916.1|AF125099_1	100%	258	485
HWLOU33	1054790	809	blastx.2	lac repressor protein (gtg start codon) [Escherichia coli]	gb|AAA24052.1|	96%	18	401
HKZBM58	1054812	810	blastx.2	sin3 associated polypeptide p18 [Homo sapiens]	gb|AAC51322.1|	100%	126	584
HTEOV06	1054813	811	blastx.2	sin3 associated polypeptide p18 [Homo	gb|AAC51322.1|	95%	317	799

HTEHP29	1055174	813	blastx.2	protein related N-terminus of tre oncogene [Homo sapiens]	dbj|BAA02807.1|	97%	7	585
HNOJJ32	1055248	814	blastx.2	PRAJA1 [Mus musculus]	gb|AAC00205.1|	73%	1084	1989
						45%	841	1620
						30%	100	948
						55%	1908	1985
HFPHF52	1055304	815	blastx.2	(AB006625) The human homolog of a mouse imprinted gene, Peg3. [Homo sapiens]	dbj|BAA22956.1|	98%	2	1348
						90%	1290	1682
						31%	251	979
						27%	62	1276
						30%	197	895
						24%	11	1333
						27%	44	1324
						26%	62	1273
						30%	146	895
						26%	5	856
						32%	605	1003
						24%	278	1147
						20%	35	979
						34%	221	484
						55%	1308	1445
						26%	1290	1676
						28%	1437	1676
						28%	596	829
						25%	1287	1769

						26%	1308	1676
						32%	1305	1499
						27%	1398	1676
						36%	905	979
						36%	1425	1499
						39%	1596	1679
						34%	1608	1676
						28%	1344	1502
HBNMF62	1055381	816	blastx.2	(AK000538) unnamed protein product [Homo sapiens]	dbj|BAA91239.1|	100%	314	625
						43%	752	859
HTPHO72	1055426	817	blastx.2	EF-hand protein [Homo sapiens]	emb|CAA55343.1|	100%	98	1048
HOPKL18	1055439	818	blastx.2	stromelysin-3 precursor [Homo sapiens]	emb|CAA40918.1|	100%	2	1438
HTXKD84	1055467	820	blastx.2	Hlark [Homo sapiens]	gb|AAC51293.1|	97%	111	581
						58%	571	1191
						55%	839	1006
HTXRR82	1055480	821	blastx.2	myosin IC [Dictyostelium discoideum]	gb|AAC37427.1|	42%	522	1310
						32%	1433	1504
HAIBU62	1055582	822	blastx.2	(AL133070) hypothetical protein [Homo sapiens]	emb|CAB61393.1|	99%	154	1518
HDTAY29	1055632	823	blastx.2	(AJ250865) TESS 2 [Homo sapiens]	emb|CAB65119.1|	99%	65	625
HCOQD79	1055767	824	blastx.2	(AF118394) putative	gb|AAD45242.1|AF1	98%	201	689

				nucleotide binding protein [Homo sapiens]	18394_1	100%	76	210
HAMHN12	1055899	825	blastx.2	Similarity to EGF domain; cDNA EST EMBL:T02406 comes from this gene [Caenorhabditis elegans]	emb|CAA94773.1|	28% 36%	53 263	559 562
HODIY67	1056000	826	blastx.2	(AF167160) protein inhibitor of activated STAT-1 [Homo sapiens]	gb|AAD49722.1|AF167160_1	99%	8	1957
HNTRS57	1056097	827	blastx.2	similar to ankyrin motifs; cDNA EST CEMSH89F comes from this 1 1 cDNA EST EMBL:D33056 comes from this gene; cDNA EST E	emb|CAA99881.1|	45%	2	853
HUKFL74	1056102	828	blastx.2	fsh-like protein [Mus musculus]	emb|CAA66186.1|	98%	1	168
HTEBF05	1056104	829	blastx.2	Wnt7a protein [Homo sapiens]	gb|AAC51319.1|	100%	9	344
HOPKD19	1056275	830	blastx.2	B-cell receptor associated protein [Homo sapiens]	gb|AAB51324.1|	100%	188	1084
HLICR58	1056290	831	blastx.2	(AF181467) protein Z-dependent protease inhibitor precursor [Homo sapiens]	gb|AAD53962.1|AF181467_1	98%	3	932

HAJAH48	1056400	833	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	100%	7	111
HSKJC61	1056407	834	blastx.2	(AF095448) putative G protein-coupled receptor [Homo sapiens]	gb|AAC98506.1|	100% 33%	366 265	1436 327
HEEBK29	1056454	835	blastx.2	(AF018081) type XVIII collagen [Homo sapiens]	gb|AAC39658.1|	95% 42% 43% 42% 46% 44% 45% 44% 38% 36% 26% 38% 35% 34% 37% 31% 25% 36% 44% 44% 29% 29% 32% 40%	1036 1036 1033 1036 1264 1429 1486 1036 1594 1327 1032 743 743 668 3777 1015 3672 3572 658 728 1432 2846 565 4021	3060 2118 2133 2166 2166 2118 2118 1632 2118 2109 2117 940 934 931 4139 1251 4190 3694 771 841 1587 3154 771 4119

						38%	677	784
						37%	749	901
						27%	707	910
						35%	2753	2905
						32%	3524	3607
						50%	3120	3161
						40%	3087	3161
						27%	3789	3971
						50%	3108	3161
						33%	3579	3731
						40%	3087	3164
						40%	2129	1140
						37%	2108	1104
						35%	2129	1056
						38%	2039	1140
						37%	2129	1053
						37%	2015	1140
						39%	2105	1140
						35%	2129	1056
						32%	2108	1164
						35%	1910	1050
						38%	2111	1230
						37%	2108	1368
						38%	2111	1566
						37%	2111	1566
						43%	2039	1692
						43%	2105	1800
						38%	2108	1632
						30%	2707	1859
						37%	2108	1608

1863	2117	43%						
2204	2680	30%						
1046	1468	32%						
2207	2707	32%						
4695	4790	45%						
2791	2997	28%						
3534	3599	52%						
2077	2394	32%						
3555	3629	48%						
3983	4135	37%						
1987	2394	27%						
2083	2457	29%						
3489	3692	29%						
1934	2020	51%						
3788	3997	32%						
2797	3015	33%						
3677	3877	36%						
3677	3862	32%						
3083	3163	48%						
2839	2988	28%						
4643	4843	29%						
2050	2394	33%						
1055	1183	32%						
676	894	30%						
2706	2825	25%						
80	178	33%						
2785	2892	38%						
2050	2157	36%						
4090	4128	61%						
4090	4131	50%						

						47%	2801	2751
HCHMM19	1056617	836	blastx.2	Lutheran blood group glycoprotein [Homo sapiens]	emb|CAA58449.1|	99%	10	1182
HE8NG02	1056625	837	blastx.2	(AL035608) dJ479J7.1 (similar to CHONDROMODULIN-1) [Homo sapiens]	emb|CAB55680.1|	93%	271	1011
HWHKD22	1056654	838	blastx.2	(AF094760) RFXANK [Homo sapiens]	gb|AAC69883.1|	59%	56	715
HOCPJ87	1056666	839	blastx.2	protein-tyrosine-phosphatase (EC 3.1.3.48) 11A - human	pir|A60345|A60345	99%	34	1125
HAAAA59	1056671	840	blastx.2	(AF151793) ALG-2 interacting protein 1 [Homo sapiens]	gb|AAF08220.1|AF151793_1	99% 56%	162 6007	2765 6048
HOSBJ18	1056672	841	blastx.2	finger protein 1, placental - human	pir|A32891|A32891	99% 68% 65% 65% 62% 61% 56% 40% 61%	752 830 914 998 590 548 482 2203 2239	2026 2095 2191 2221 1858 1774 1606 2322 2277
HUSGX12	1056736	842	blastx.2	GATA-6 [Homo sapiens]	dbj|BAA22621.1|	100%	2	838
HPDRG02	1056764	843	blastx.2	protein disulfide isomerase-related protein [Homo sapiens]	gb|AAA58460.1|	99% 42% 41%	26 26 1031	1405 523 1366

HKZBB48	1056767	844	blastx.2	(AB022663) HFB30 [Homo sapiens]	dbj|BAA78677.1|	100%	239	1660
HHAWB19	1056774	845	blastx.2	(AF140242) encephalopsin [Homo sapiens]	gb|AAD32671.1|AF140242_1	98%	111	1316
HHATP38	1056786	846	blastx.2	VEGF related factor isoform VRF167 precursor [Homo sapiens]	gb|AAA91463.1|	100%	87	650
HVVBE07	1056801	847	blastx.2	(AF003944) ovalbumin upstream promoter beta nuclear receptor rCOUPb [Rattus norvegicus]	gb|AAB61297.1|	97% 32%	702 185	983 328
HKAHB85	1056804	848	blastx.2	ear-2 gene product [Homo sapiens]	emb|CAA31282.1|	98%	4	831
HUSXA15	1056810	849	blastx.2	(AP000616) similar to RING-H2 finger protein RHA1a (AF078683) [Oryza sativa]	dbj|BAA85438.1|	75% 62%	300 295	205 167
HNOCH54	1056839	850	blastx.2	Protein sequence and annotation available soon via Swiss-Prot; 1 [Homo sapiens]	emb|CAA62188.1|	30% 26% 26% 23% 24% 24% 24% 26%	727 556 727 703 703 706 892 703	1833 1875 1779 1809 1782 1812 1827 1812

1782	727	24%					
1833	724	21%					
1827	733	24%					
1827	883	25%					
1824	856	26%					
1236	28	22%					
1833	883	23%					
1836	865	21%					
1827	856	22%					
1833	988	23%					
1836	730	22%					
852	4	24%					
876	1	25%					
1782	715	22%					
408	7	32%					
690	145	31%					
876	31	24%					
1830	976	23%					
456	1	28%					
852	31	25%					
885	16	22%					
1359	382	23%					
1527	745	23%					
843	22	20%					
906	1	26%					
408	7	28%					
411	1	26%					
1296	424	24%					
411	10	30%					
1251	724	23%					

						25%	259	690
						31%	22	411
						25%	430	1293
						34%	427	681
						21%	1054	1635
						35%	250	501
						24%	427	1251
						24%	430	1311
						30%	1	369
						25%	7	612
						23%	427	1383
						28%	352	678
						23%	730	1782
						31%	250	501
						34%	424	684
						35%	427	681
						24%	1108	1743
						32%	415	681
						26%	430	1356
						26%	313	675
						29%	427	681
						27%	322	690
						27%	322	675
						30%	430	690
						30%	343	693
						36%	1648	1830
						33%	430	684
						31%	412	675
						22%	430	1383
						22%	1369	1929

						31%	406	684
						29%	1	282
						27%	343	675
						29%	31	420
						22%	430	1401
						32%	430	681
						27%	337	675
						27%	184	411
						23%	1012	1635
						28%	406	843
						26%	337	753
						27%	1627	1896
						23%	1120	1521
						24%	997	1401
						34%	430	576
						30%	421	675
						27%	10	408
						24%	1357	1785
						31%	430	684
						29%	358	681
						24%	376	765
						25%	1618	1803
						29%	427	681
						28%	352	681
						25%	427	1308
						32%	424	678
						25%	349	690
						29%	259	501
						22%	1108	1743
						21%	364	1359

1554	1273	25%				
768	424	30%				
720	412	28%				
1383	961	25%				
693	427	30%				
1308	430	22%				
1311	409	22%				
1236	634	25%				
1383	430	21%				
1458	1123	21%				
576	427	31%				
690	430	31%				
1818	1648	31%				
1698	1267	25%				
678	427	27%				
681	421	28%				
654	418	26%				
1827	1651	28%				
1827	1648	30%				
1401	1072	22%				
1869	1288	24%				
573	388	29%				
771	424	27%				
1077	499	25%				
1953	1621	26%				
1635	1375	22%				
1527	1279	30%				
681	427	30%				
681	430	32%				
699	430	25%				

1812	1660	32%				
1830	1648	25%				
1830	1648	34%				
1782	1333	24%				
684	415	23%				
1827	1648	26%				
1644	1273	26%				
1254	1006	29%				
1527	1009	21%				
654	418	29%				
1533	1282	22%				
1827	1582	23%				
678	430	32%				
432	148	28%				
1488	1117	18%				
1812	1648	27%				
1509	1123	21%				
420	16	31%				
1827	1618	29%				
1527	1123	25%				
1347	1012	27%				
1644	1390	20%				
681	382	25%				
1782	1369	27%				
675	352	22%				
1311	427	23%				
678	427	25%				
654	430	32%				
684	427	25%				
693	430	29%				

						27%	424	684
						23%	1648	1929
						28%	1648	1929
						28%	1018	1383
						25%	1651	1827
						22%	1648	1830
						26%	1384	1587
						26%	1648	1827
						24%	1648	1830
						21%	1012	1452
						32%	430	621
						27%	1669	1812
						23%	1393	1635
						30%	1648	1806
						32%	1123	1242
						23%	1369	1929
						25%	1648	1827
						34%	427	567
						40%	1648	1782
						28%	1057	1239
						24%	961	1383
						26%	1357	1554
						25%	1648	1800
						22%	976	1518
						28%	1222	1509
						26%	724	1023
						22%	4	300
						28%	1390	1560
						18%	1123	1554
						22%	1648	1818

						20%	907	1245
						25%	1288	1584
						20%	1075	1905
						22%	1120	1383
						21%	1207	1806
						26%	409	675
						25%	28	411
						22%	1285	1509
						26%	16	435
						25%	1648	1917
						23%	1648	1812
						37%	1463	1567
						18%	1072	1530
						21%	1369	1929
						24%	1648	1782
						25%	1642	1782
						22%	1012	1401
						27%	338	454
						22%	1651	1839
						23%	1174	1509
						26%	1357	1734
						23%	1369	1626
						21%	1375	1635
						16%	754	1788
						26%	440	631
						24%	427	798
						25%	1	165
						25%	124	429
						23%	1651	1800
						22%	1648	1830

2095	2018	42%							
144	1	25%							
1314	1195	34%							
1362	979	22%							
144	67	34%							
1368	1123	30%							
1827	1648	20%							
1091	897	28%							
1458	1318	25%							
1929	1468	22%							
1827	1648	20%							
533	477	47%							
2018	1980	53%							
1236	1120	23%							
1175	993	33%							
1827	1651	22%							
1827	1648	22%							
1509	1375	24%							
2092	1910	24%							
1837	1733	25%							
1692	1648	53%							
528	397	29%							
1731	1369	20%							
2060	1878	27%							
1440	1336	31%							
1554	1327	25%							
1467	1120	23%							
1830	1648	21%							
2078	2031	43%							
1321	1256	40%							

						50%	814	849
						45%	1863	1928
						27%	127	393
						25%	1120	1236
HOCPP16	1056856	851	blastx.2	insulin-like growth factor binding protein 2 [Homo sapiens]	gb|AAA03246.1|	100%	36	650
HNOAH83	1056862	852	blastx.2	platelet-endothelial tetraspan antigen 3 [Homo sapiens]	gb|AAA87064.1|	100%	90	848
HE2OU10	1056875	853	blastx.2	OTK27 [Homo sapiens]	dbj|BAA23363.1|	100%	97	480
HODGM46	1056927	854	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	68%	5	229
HODFR44	1056990	855	blastx.2	(AL137516) hypothetical protein [Homo sapiens]	emb|CAB70782.1|	99%	11	469
						42%	14	343
						47%	20	319
						50%	71	313
						48%	14	274
						34%	14	403
						38%	14	313
						38%	38	313
HCHND12	1057009	856	blastx.2	(AF121963) receptor tyrosine kinase precursor [Gallus gallus]	gb|AAD31764.1|AF121963_1	77%	136	321
						77%	299	403
						37%	6	155
						42%	48	131
						32%	45	155
						42%	63	176
						38%	54	155

HBHAC29	1057157	857	blastx.2	myelin-associated glycoprotein precursor [Homo sapiens]	gb|AAA59545.1|	98% 90% 39% 100%	2 427 20 786	424 759 400 815
HTPFW87	1057170	858	blastx.2	carboxyl ester lipase [Homo sapiens]	gb|AAA51973.1|	98% 34% 39% 35% 37% 36% 36% 34% 34% 34%	5 1620 2154 2160 2136 2160 2160 2109 2010 1977	2206 2084 1687 1690 1687 1705 1768 1681 1687 1687
HISAF60	1057212	859	blastx.2	junctional adhesion molecule [Mus musculus]	gb|AAC32982.1|	38%	116	988
HRABO80	1057219	860	blastx.2	(AL050143) hypothetical protein [Homo sapiens]	emb|CAB43289.1|	100%	1590	1937
HADDF30	1057260	861	blastx.2	transcription regulatory protein Evi-1, short form - human	pir|B60191|B60191	98% 22%	1 7	1155 858
HDAAS58	1057272	862	blastx.2	(AC005003) similar to zinc finger protein MAZ [Homo sapiens]; similar to AAB04121.1 (PID:g995935)	gb|AAF01349.1|AC005003_1	77%	263	676
HSDZG15	1057307	863	blastx.2	Homology with Squid retinal-binding protein	emb|CAA91418.1|	68% 47%	3 1212	713 1274

				(PIR Acc. No. 1 1				
HPDVY52	1057393	864	blastx.2	laminin alpha 5 chain [Mus musculus]	gb|AAC53430.1|	64% 47%	6 1165	1196 1380
HHESW02	1057478	865	blastx.2	(AF062075) leupaxin [Homo sapiens]	gb|AAC16014.1|	100% 34%	95 896	1252 1258
HVVBW84	1057561	866	blastx.2	(AB003184) ISLR [Homo sapiens]	dbj|BAA22848.1|	100%	342	1625
HSLJC80	1057797	868	blastx.2	prolargin [Homo sapiens]	gb|AAC18782.1|	32% 32% 28% 28% 29% 34%	353 899 686 1109 1663 262	1228 1573 1420 1657 1980 357
HEOAD12	1057842	869	blastx.2	(AF116865) hedgehog-interacting protein [Mus musculus]	gb|AAD31172.1|AF116865_1	70%	533	1069
HVVBT41	1057880	870	blastx.2	(AL035587) dJ475N16.1 (CTG4A) [Homo sapiens]	emb|CAB75301.1|	100%	439	1272
HAZAE42	1057915	871	blastx.2	cellular retinol binding protein [Homo sapiens]	emb|CAA30318.1|	100%	255	659
HPRBN60	1057948	872	blastx.2	(AF002282) alpha-actinin-2 associated LIM protein [Homo sapiens]	gb|AAC16672.1|	99%	72	1019
HOVCZ68	1057958	873	blastx.2	follistatin 1 precursor - human	pir|A32141|A32141	99%	1	987
H6EDF71	1057979	874	blastx.2	antigenic surface determinant OA3	emb|CAA49196.1|	99%	92	1021

				[Homo sapiens]				
HCOOF60	1058001	875	blastx.2	ubiquitin carrier protein E2 - human	pir|B42856|B42856	99%	133	855
HVVBH81	1058059	876	blastx.2	hnRNP U protein [Homo sapiens]	emb|CAA46472.1|	99%	227	2644
HSPTJ51	1058172	877	blastx.2	SWI/SNF complex 155 KDa subunit [Homo sapiens]	gb|AAC50693.1|	95% 90% 29%	51 51 45	1004 1043 1055
HOPKC80	1058174	878	blastx.2	(AJ011497) Claudin-7 [Homo sapiens]	emb|CAA09626.1|	99%	348	980
HOCPT58	1058250	879	blastx.2	(AF037261) SH3-containing adaptor molecule-1 [Homo sapiens]	gb|AAC09244.1|	100% 94%	121 19	765 126
HPCTP25	1058287	880	blastx.2	gamma-aminobutyraldehyde dehydrogenase [Homo sapiens]	gb|AAB18827.1|	98%	72	1553
HODKM52	1058305	881	blastx.2	(AB008789) grb7 protein [Homo sapiens]	dbj|BAA29059.1|	98%	58	999
HCONB89	1058316	882	blastx.2	acid ceramidase [Homo sapiens]	gb|AAC50907.1|	99%	118	1302
HBPND88	1058432	884	blastx.2	carboxyl terminal LIM domain protein [Homo sapiens]	gb|AAC05580.1|	99%	142	1128
H6EEO05	1058438	885	blastx.2	(AL117423) hypothetical protein [Homo sapiens]	emb|CAB55915.1|	99%	100	1527
HFIVR61	1058451	886	blastx.2	interferon beta 2a	emb|CAA00839.1|	99%	214	777

				[Homo sapiens]				
HVVBX28	1058458	887	blastx.2	SH3 domain-containing protein SH3P17 [Homo sapiens]	gb|AAC50592.1|	96% 49% 36%	53 308 104	493 466 301
HVVBI38	1058475	888	blastx.2	factor H [Homo sapiens]	emb|CAA68704.1|	99% 25% 26% 25% 28% 27%	294 336 294 501 1083 1185	2291 2264 2291 2219 2288 2099
HUKEJ46	1058539	889	blastx.2	(AF081507) signaling molecule LEFTY-B [Homo sapiens]	gb|AAC33967.1|	98% 99%	479 70	1165 489
HDTFT47	1058588	890	blastx.2	lymphocyte antigen [Homo sapiens]	gb|AAA36236.1|	98% 91%	2 258	268 398
HSSFS71	1058596	891	blastx.2	ESP1/CRP2 [Homo sapiens]	dbj|BAA07703.1|	95% 77% 34%	29 41 219	460 265 512
HSDJH63	1058612	892	blastx.2	(AB045180) toll-like receptor 9 [Homo sapiens]	dbj|BAB19259.1|	92% 100% 52% 45% 58%	192 107 128 122 131	1358 190 184 181 181
HAHGD24	1058622	893	blastx.2	laminin alpha 5 chain [Mus musculus]	gb|AAC53430.1|	61%	80	1024
HTAEV85	1058723	894	blastx.2	(AJ005566) SPR2H protein [Mus musculus]	emb|CAA06595.1|	43% 64% 50% 35%	408 2500 1784 544	256 2459 1719 485
HPMME44	1058928	895	blastx.2	HCMVUL126 [human	emb|CAA35328.1|	96%	78	329

				herpesvirus 5]				
HSPSG28	1058977	897	blastx.2	26S protease subunit [Sus scrofa]	emb|CAA61863.1|	99% 88%	483 56	1679 82
HTGFW12	1059006	898	blastx.2	homolog of yeast mutL gene [Homo sapiens]	gb|AAA63923.1|	98% 94% 68%	83 1522 1431	1438 2670 1667
HOFMT75	1059050	899	blastx.2	cathepsin D [Homo sapiens]	gb|AAA51922.1|	87% 80%	7 414	456 743
HARNB17	1059085	900	blastx.2	HCMVUL126 [human herpesvirus 5]	emb|CAA35328.1|	98%	241	492
HPDRG65	1059102	901	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	69% 69% 83%	434 253 288	273 128 253
HAOSG15	1059145	902	blastx.2	(AF026291) chaperonin containing t-complex polypeptide 1, delta subunit; CCT-delta [Homo sapiens]	gb|AAC96010.1|	100%	160	1776
HHEND31	1059180	903	blastx.2	(AF117330) unknown [Rattus norvegicus]	gb|AAD26207.1|AF117330_1	73%	175	1827
HBMSN62	1059186	904	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	86%	1102	1251
HOVCJ46	1059241	905	blastx.2	(AF037272) WAP four-disulfide core	gb|AAC40055.1|	87% 70%	41 175	214 336

				domain protein [Rattus norvegicus]				
HWLEP14	1059394	906	blastx.2	(AF117646) long CBL-3 protein [Homo sapiens]	gb|AAD34341.1|AF117646_1	99%	92	1348
HDABR73	1059532	908	blastx.2	bikunin [Homo sapiens]	gb|AAC02781.1|	100%	436	1191
HOGAJ24	1059626	909	blastx.2	Similar to Human tesican (S33293) [Homo sapiens]	dbj|BAA13404.1|	100%	427	1698
HTJMV05	1059692	910	blastx.2	protein tyrosine phosphatase [Homo sapiens]	gb|AAA50779.1|	100%	5	685
HOOIL70	1059710	911	blastx.2	hematopoietic cell phophatase [Homo sapiens]	gb|AAA35963.1|	100% 37% 32% 30%	212 188 2209 2219	1996 508 2310 2296
HUNAE87	1059743	912	blastx.2	(AF062317) p120 catenin isoform 1B [Homo sapiens]	gb|AAC39802.1|	99%	158	955
HTPHO01	1059764	913	blastx.2	(AF169284) LIM and cysteine-rich domains protein 1 [Homo 1	gb|AAF34411.1|	97%	125	1048
HDPWK69	1059784	914	blastx.2	(AL031629) similar to RNA recognition motif. (aka RRM, RBD, or 1 1	emb|CAA20980.2|	52%	275	496

HPCOK03	1059849	915	blastx.2	(AF008551) aurora-related kinase 1 [Homo sapiens]	gb|AAC12708.1|	99%	59	1267
HOOJC15	1059967	917	blastx.2	(AL117639) hypothetical protein [Homo sapiens]	emb|CAB56027.1|	98%	575	1216
HODFG47	1059969	918	blastx.2	(AF132856) suppressor of G2 allele of skp1 homolog [Homo sapiens]	gb|AAD30062.1|	100%	215	1213
HBIPC05	1060137	919	blastx.2	(AF078798) extracellular signal-regulated kinase 7; ERK7 [Rattus norvegicus]	gb|AAD12719.1|	62%	23	832
HOPJJ32	1060193	920	blastx.2	replication protein A 14kDa subunit [Homo sapiens]	gb|AAA58350.1|	100%	447	635
HNOBN20	1060382	921	blastx.2	unknown protein [Homo sapiens]	gb|AAA88036.1|	43% 47%	1362 1487	1150 1380
HOCPX74	1060391	922	blastx.2	(AL137714) hypothetical protein [Homo sapiens]	emb|CAB70887.1|	91%	18	656
HTEPP27	1060415	923	blastx.2	PF20 [Chlamydomonas reinhardtii]	gb|AAB41727.1|	39%	207	581
HLYAJ79	1060495	924	blastx.2	ATPase subunit 6 [Homo sapiens]	dbj|BAA07295.1|	79%	197	808
HCOOQ11	1060656	925	blastx.2	sialidase [Homo sapiens]	emb|CAA55356.1|	70% 100%	1 189	189 308

HWMGI51	1060711	926	blastx.2	hypothetical protein [Synechocystis sp.]	dbj|BAA10294.1|	41%	16	615
HDPJG33	1060780	927	blastx.2	GTP binding protein [Mus musculus]	emb|CAA36803.1|	78% 68% 37%	543 439 933	863 699 1061
HLYAE20	1060967	928	blastx.2	hypothetical protein 2 (rRNA external transcribed spacer) - 1	pir|S12206|S12206	67%	1002	1259
HKZAR86	1060972	929	blastx.2	ERF-2 [Homo sapiens]	emb|CAA55592.1|	99%	322	1302
HAOTX62	1061036	930	blastx.2	SPIN protein [Homo sapiens]	emb|CAA75163.1|	100%	77	298
HOCQG58	1061180	931	blastx.2	26S PROTEASOME REGULATORY SUBUNIT S2 (P97) (TUMOR 1 1	sp|Q13200|PSD2_HUMAN	100%	63	2786
HOFNH33	1061185	932	blastx.2	MRAS2 gene product [Mucor racemosus]	gb|AAA83994.1|	31%	260	823
HAJAQ63	1061238	933	blastx.2	matrin 3 [Rattus norvegicus]	gb|AAB63955.1|	90% 94% 54% 98% 24% 31% 35% 35% 40%	1038 293 2361 3308 2634 2646 1755 3362 3837	2570 1105 2810 3478 2813 2759 1847 3454 3896
HVVBK70	1061258	934	blastx.2	(AJ000414) Cdc42-interacting protein 4 [Homo sapiens]	emb|CAA04062.1|	92% 100% 28%	653 31 627	1276 468 1055
HVVBA82	1061332	935	blastx.2	(AL022313)	emb|CAA18439.1|	100%	3	500

				dJ1119A7.1 (mitochondrial thioredoxin) [Homo sapiens]					
HWLLG38	1061388	936	blastx.2	neurocalcin [Bos taurus]	dbj|BAA01706.1|	100%	114	692
HTPCH84	1061466	937	blastx.2	(AF104419) decoy receptor 3 [Homo sapiens]	gb|AAD03056.1|	99% 100%	103 938	945 1000
HLGDA34	1061543	939	blastx.2	(AK000496) unnamed protein product [Homo sapiens]	dbj|BAA91205.1|	71% 73%	3 1766	254 1641
HAICB08	1061629	940	blastx.2	rhoHP1 [Homo sapiens]	dbj|BAA19652.1|	100%	3	326
HVVAW60	1061694	941	blastx.2	(AF151882) CGI-124 protein [Homo sapiens]	gb|AAD34119.1|AF151882_1	100%	244	741
HPDVB50	1061708	942	blastx.2	(AJ002030) progresterone binding protein [Homo sapiens]	emb|CAA05152.1|	100%	33	206
HAZAY40	1061765	943	blastx.2	tight junction (zonula occludens) protein ZO-1 [Homo sapiens]	gb|AAA02891.1|	100%	3	1631
HACMZ51	1061766	944	blastx.2	contains 10 ankyrin-like repeats; similar to human ankyrin, 1 bursaria Chlorella virus 1]	gb|AAC96986.1|	33% 28% 32% 30%	118 73 100 88	957 726 657 561
HUXAL63	1061790	945	blastx.2	100 kDa protein [Rattus norvegicus]	emb|CAA45756.1|	98%	2	1300

HLCLX57	1061886	946	blastx.2	latent transforming growth factor-beta-binding protein-2, 1 1	gb|AAB37459.1|	99%	3	953
						37%	447	941
						32%	27	398
						34%	21	398
						45%	696	941
						40%	693	914
						41%	696	941
						42%	681	929
						38%	666	941
						36%	693	914
						32%	666	989
						34%	684	929
						34%	657	929
						34%	666	941
						43%	12	167
						35%	696	929
						45%	6	149
						47%	15	149
						31%	9	377
						46%	3	155
						35%	678	914
						40%	3	149
						29%	9	365
						35%	3	155
						38%	3	143
						40%	246	371
						41%	837	944
						34%	3	143
						29%	15	188
						28%	99	215

						35%	118	252
						22%	280	483
						57%	427	468
HMALF63	1061935	947	blastx.2	factor activating exoenzyme S [Bos taurus]	gb|AAA30514.1|	99%	519	1130
HACMR36	1062057	948	blastx.2	(AK000963) unnamed protein product [Homo sapiens]	dbj|BAA91446.1|	86%	181	1290
						99%	29	391
						27%	1141	1323
						34%	1460	1528
						33%	1710	1805
						27%	1883	2170
						50%	1506	1553
HAOSM08	1062079	949	blastx.2	(AF059617) serum-inducible kinase [Homo sapiens]	gb|AAC14573.1|	99%	284	2338
HTEFM89	1062084	950	blastx.2	(AF162680) STRIN protein [Homo sapiens]	gb|AAD46623.2|AF162680_1	99%	500	1234
HCHAK72	1062123	951	blastx.2	(AF113596) mosaic serine protease epitheliasin [Mus musculus]	gb|AAF21308.1|	47%	95	1165
HPAME12	1062139	952	blastx.2	retinoic acid- and interferon-inducible 58K protein RI58 [Homo sapiens]	gb|AAA84934.1|	100%	209	1654
HCE4F10	1062309	954	blastx.2	(AL050060) hypothetical protein [Homo sapiens]	emb|CAB43253.1|	97%	798	1535

HBCBE63	1062328	955	blastx.2	(AF007170) unknown [Homo sapiens]	gb|AAC39582.1|	100% 69% 87% 57%	191 87 25 1	790 251 96 63
HSSJO19	1062346	956	blastx.2	endonuclease G [Bos taurus]	emb|CAA51320.1|	97% 24%	361 1093	248 887
HE8NQ23	1062369	957	blastx.2	(AF062006) orphan G protein-coupled receptor HG38 [Homo sapiens]	gb|AAC28019.1|	99% 100% 87%	574 416 171	1419 571 263
HTELJ95	1062431	958	blastx.2	(AB006679) ATP binding protein [Homo sapiens]	dbj|BAA21881.1|	99%	272	949
HTPCP50	1062435	959	blastx.2	(AF111069) latrophilin 2 splice variant baaae [Bos taurus]	gb|AAD05305.1|	38% 47%	417 1997	2129 2044
HFKIT82	1062544	961	blastx.2	(AF152495) protocadherin beta 2 [Homo sapiens]	gb|AAD43756.1|AF152495_1	98% 30% 26%	2 20 26	1663 1297 1267
HE2LW42	1062574	962	blastx.2	(AF090934) PRO0518 [Homo sapiens]	gb|AAF24048.1|AF090934_1	100%	1267	1079
HOGCE44	1062586	963	blastx.2	protein tyrosine phosphatase (EC 3.1.3.48) [Homo sapiens]	gb|AAA36528.1|	99%	156	2561
HOVJJ72	1062626	964	blastx.2	latent TGF-beta binding protein-4 [Homo sapiens]	emb|CAA73944.1|	85% 91% 85%	547 203 1	1782 559 204

1728	562	30%						
363	1	45%						
1296	16	29%						
885	16	30%						
1869	1537	33%						
1920	1132	33%						
276	4	41%						
1926	1465	32%						
198	1	48%						
1761	1507	38%						
1734	1435	35%						
1761	1474	36%						
1881	1366	29%						
198	4	47%						
1116	553	29%						
1743	1453	38%						
198	34	36%						
153	16	34%						
583	212	23%						
268	209	60%						
1164	562	25%						
268	215	66%						
298	215	53%						
268	206	42%						
556	410	32%						
280	215	52%						
268	215	55%						
328	212	38%						
301	212	40%						
493	245	29%						

								37%	215	346
								37%	212	307
								42%	209	271
								29%	4	210
								55%	215	265
								30%	212	310
								29%	841	921
								32%	1766	1930
								32%	1667	1861
								58%	230	265
								29%	215	460
								56%	1764	1838
								58%	1792	1842
								63%	1859	1891
								40%	1391	1450
								37%	12	95
								37%	254	406
								66%	549	584
								87%	838	569
								34%	1633	1421
								69%	2007	1969
								30%	1621	1421
								38%	1024	938
								30%	1552	1352
								63%	1525	1493
								70%	1295	1266
HODBT14	1062628	965	blastx.2	guanine nucleotide exchange factor [Homo sapiens]	gb|AAA35914.1|	100%	15	320		
HBOEB83	1062629	966	blastx.2	thrombospondin-4	emb|CAA79635.1|	95%	4	1392		

HODCT96	1062631	967	blastx.2	repressor transcriptional factor [Homo sapiens]	gb|AAA79179.1|	74%	2	247
						74%	2	247
						73%	2	247
						56%	2	337
						40%	2	514
						69%	2	247
						69%	2	247
						41%	2	490
						78%	250	468
						67%	2	247
						66%	2	259
						71%	250	468
						73%	250	462
						77%	259	468
						71%	250	468
						75%	250	456
						70%	250	471
						69%	250	468
						71%	250	468
						64%	250	468
						63%	250	468
						72%	250	423
						38%	2	313
						49%	253	459
HTXJE60	1062655	968	blastx.2	(AK000642) unnamed protein product [Homo sapiens]	dbj|BAA91301.1|	50%	171	1112
HUSIQ62	1062679	969	blastx.2	high mobility group 2 protein [Homo sapiens]	gb|AAA58659.1|	100%	188	814
						31%	143	472

HKBAK29	1062718	971	blastx.2	(AF161525) HSPC177 [Homo sapiens]	gb|AAF29140.1|AF161525_1	100% 93%	975 42	1562 140
HPMCX26	1062743	972	blastx.2	LIMK-2 [Homo sapiens]	dbj|BAA08312.1|	97%	365	649
HFKHF51	1062785	973	blastx.2	(AF177203) cerebral cell adhesion molecule [Homo sapiens]	gb|AAD51367.1|AF177203_1	99%	360	1910
HUCPE28	1062795	974	blastx.2	extensin [Volvox carteri]	emb|CAA46283.1|	36% 36% 36% 38% 27%	728 728 735 734 119	1063 958 1055 949 460
HPWAH30	1062840	975	blastx.2	zinc finger protein [Homo sapiens]	gb|AAA59469.1|	98% 77% 76% 76% 81% 75% 77% 75% 74% 76% 74% 75% 74%	1 1 1 1 1 1 1 1 1 1 1 10 1	705 705 705 705 666 702 696 705 705 705 705 705 705

						74%	1	705
						72%	1	705
						73%	1	705
						72%	1	705
						71%	1	705
						72%	1	705
						71%	1	705
						71%	1	705
						71%	1	705
						71%	1	705
						70%	1	705
						71%	1	705
						71%	1	705
						71%	1	705
						67%	1	705
						63%	1	705
						59%	163	705
						52%	702	815
						51%	723	815
						51%	723	815
						42%	702	815
						48%	723	815
						42%	702	815
						45%	723	815
						39%	702	815
						45%	723	815
						39%	702	815
						39%	702	815
						46%	726	815
						45%	723	815

						36%	702	815
						42%	723	806
						36%	702	815
						41%	723	815
						41%	723	815
						41%	723	815
						42%	726	809
						43%	726	815
						43%	726	815
						43%	726	815
H6EDQ51	H6EDQ51R	976	blastx.2	cytochrome b [Homo sapiens]	gb|AAA19775.1|	95%	10	210
HA5AU29	HA5AU29R	977	blastx.2	amyloid-beta protein [Homo sapiens]	gb|AAB59501.1|	85%	2	190
HACBX26	HACBX26R	978	blastx.2	NADH dehydrogenase subunit 1 [Homo sapiens]	dbj|BAA07290.1|	89%	2	259
HACMH72	HACMH72R	982	blastx.2	TraC protein (gtg start codon) [Plasmid F]	gb|AAA24905.1|	93%	35	478
HACMS55	HACMS55R	985	blastx.2	(AF013215) ribosomal protein S2 [Bos taurus]	gb|AAB65437.1|	100%	3	116
HACMX77	HACMX77R	986	blastx.2	protein kinase C inhibitor-I [Homo sapiens]	gb|AAA82926.1|	100%	42	419
HACMZ45	HACMZ45R	987	blastx.2	Keratin 8 [Homo sapiens]	emb|CAA52882.1|	100%	3	245

HACND54	HACND54R	988	blastx.2	(AC003956) acetolactate synthase [Homo sapiens]	gb|AAB94632.1|	67% 78%	2 267	466 404
HACNF21	HACNF21R	991	blastx.2	40-kDa keratin protein [Homo sapiens]	gb|AAA36044.1|	86%	3	608
HACNF41	HACNF41R	992	blastx.2	cytokeratin 8 (279 AA) [Homo sapiens]	emb|CAA31376.1|	100%	2	91
HACNI47	HACNI47R	993	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	95%	96	500
HADET44	HADET44R	996	blastx.2	URF 1 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24026.1|	95% 92%	62 481	481 522
HAHHD12	HAHHD12R	998	blastx.2	(AF016252) Spinophilin [Rattus norvegicus]	gb|AAB72005.1|	96%	1	96
HALSG11	HALSG11R	999	blastx.2	(AC004544) cytochrome C oxidase; match to P14406 (PID:g117121) [Homo sapiens]	gb|AAC12952.1|	74% 74%	116 54	376 134
HAOSB87	HAOSB87R	1002	blastx.2	delta- aminolevulinate synthase (housekeeping) [Homo sapiens]	emb|CAA39794.1|	73%	1	549
HAOSE70	HAOSE70R	1004	blastx.2	acidic ribosomal phosphoprotein (P1) [Homo sapiens]	gb|AAA36471.1|	88% 55%	166 273	267 359
HAOSF68	HAOSF68R	1005	blastx.2	laminin-binding protein [Homo sapiens]	gb|AAA36161.1|	90%	76	576

HAOSG95	HAOSG95R	1006	blastx.2	ribosomal protein S20 [Homo sapiens]	gb|AAA60286.1|	82%	111	452
HAOSI79	HAOSI79R	1007	blastx.2	ribosomal protein L7 [Homo sapiens]	gb|AAA03081.1|	95%	10	330
HAOSJ27	HAOSJ27R	1008	blastx.2	polyubiquitin - tobacco hornworm (fragments)	pir|JH0302|JH0302	100% 100% 75% 73% 49% 39% 72%	2 2 135 135 156 223 223	142 142 233 224 332 405 255
HAOSJ33	HAOSJ33R	1009	blastx.2	lactate dehydrogenase-A [Homo sapiens]	emb|CAA26879.1|	95%	3	353
HAOSK38	HAOSK38R	1011	blastx.2	Ku protein subunit [Homo sapiens]	gb|AAA36155.1|	100%	4	303
HAOSL36	HAOSL36R	1012	blastx.2	S-adenosylhomocysteine hydrolase [Homo sapiens]	gb|AAA51681.1|	94% 96% 71% 88%	30 224 336 1	200 379 494 27
HAOSL47	HAOSL47R	1013	blastx.2	(AF155581) proteasome subunit beta 7 [Danio rerio]	gb|AAD53521.1|AF155581_1	91% 93% 55% 80%	86 4 432 340	343 96 572 429
HAOTE06	HAOTE06R	1021	blastx.2	(AF132947) CGI-13 protein [Homo sapiens]	gb|AAD27722.1|AF132947_1	98%	2	451
HAOTF90	HAOTF90R	1023	blastx.2	carboxyl methyltransferase [Homo sapiens]	dbj|BAA02991.1|	94%	3	170
HAOTI07	HAOTI07R	1026	blastx.2	HL23 ribosomal protein [Homo sapiens]	emb|CAA39417.1|	96% 84%	36 398	365 454

HAOTT79	HAOTT79R	1027	blastx.2	CYTOSKELETON-ASSOCIATED PROTEIN CKAPI (TUBULIN FOLDING COFACTOR B).	sp|Q99426|CKAP_HUMAN	88% 53%	9 332	356 376
HAOTU79	HAOTU79R	1028	blastx.2	ME491 antigen precursor (AA -1 to 237) [Homo sapiens]	emb|CAA30792.1|	97%	57	452
HAOTW22	HAOTW22R	1029	blastx.2	KERATIN, TYPE II CYTOSKELETAL 8 (CYTOKERATIN 8) (K8) (CK 1	sp|P05787|K2C8_HUMAN	100%	1	201
HAPNK45	HAPNK45R	1032	blastx.2	cytochrome c oxidase subunit 1 [Homo sapiens]	dbj|BAA07292.1|	90% 79% 90% 100%	2 274 473 261	262 516 535 281
HAPPR43	HAPPR43R	1033	blastx.2	hypothetical 18K protein - goldfish mitochondrion	pir|JC1348|JC1348	42%	146	472
HAQML40	HAQML40R	1035	blastx.2	ribosomal protein L39 [Homo sapiens]	dbj|BAA11465.1|	98%	106	258
HAUAK54	HAUAK54R	1037	blastx.2	CAG-isl 7 [Homo sapiens]	gb|AAC16021.1|	62%	12	245
HAZAC68	HAZAC68R	1042	blastx.2	lumican [Homo sapiens]	gb|AAA91639.1|	97% 26% 36%	3 3 3	587 551 500
HAZAD13	HAZAD13R	1043	blastx.2	human elongation factor-1-delta [Homo sapiens]	emb|CAA79716.1|	74% 60%	53 250	478 555

HAZAE44	HAZAE44R	1045	blastx.2	fibronectin precursor [Homo sapiens]	emb|CAA26536.1|	98%	84	512
						46%	105	335
						40%	105	413
						39%	123	347
						36%	69	392
						35%	105	344
						33%	18	347
HAZAG23	HAZAG23 R	1046	blastx.2	unnamed protein product [Homo sapiens]	emb|CAA62211.1|	96%	2	466
HAZAI89	HAZAI89R	1051	blastx.2	KERATIN, TYPE II CYTOSKELETAL 8 (CYTOKERATIN 8) (K8) (CK 1	sp|P05787|K2C8_HUMAN	100%	72	260
HAZAJ72	HAZAJ72R	1052	blastx.2	protein arginine N-methyltransferase [Rattus norvegicus]	gb|AAC52622.1|	97%	1	537
						58%	497	580
						81%	579	611
						34%	537	605
HAZAQ80	HAZAQ80 R	1053	blastx.2	(AF064205) dynactin 1 p135 isoform [Homo sapiens]	gb|AAD55812.1|	100%	84	389
HAZBI39	HAZBI39R	1056	blastx.2	(AL031427) dJ167A19.3 (novel protein) [Homo sapiens]	emb|CAB46723.1|	100%	83	424
HAZBJ69	HAZBJ69R	1057	blastx.2	transmembrane protein	emb|CAA66947.1|	100%	3	323

HBJHY72	HBJHY72R P00B	1063	blastx.2	(AL117434) hypothetical protein [Homo sapiens]	emb|CAB55922.1|	98%	1	297
HBXCG52	HBXCG52 R	1065	blastx.2	(AK001079) unnamed protein product [Homo sapiens]	dbj|BAA91496.1|	89% 46%	371 457	427 606
HCACS53	HCACS53R P00A	1067	blastx.2	histone H3 [Spisula solidissima]	gb|AAA29965.1|	90% 100% 86%	313 116 506	507 244 574
HCHAJ85	HCHAJ85R	1068	blastx.2	hemolysin [Acanthamoeba polyphaga]	gb|AAA58585.1|	61%	206	57
HCHMM71	HCHMM71 R	1069	blastx.2	(AC003040) unknown protein [Arabidopsis thaliana]	gb|AAC23757.1|	58% 44%	2 249	244 329
HCLBH21	HCLBH21R	1071	blastx.2	cytochrome c oxidase subunit 1 [Pan troglodytes]	dbj|BAA85270.1|	91% 88%	3 415	416 600
HCOMA72	HCOMA72 R	1073	blastx.2	NuMA protein - human	pir|S33413|S33413	100%	115	273
HCOMB04	HCOMB04 R	1074	blastx.2	prolylcarboxypeptidase [Homo sapiens]	gb|AAA99891.1|	98% 55%	77 702	718 782
HCOMD38	HCOMD38 R	1075	blastx.2	phospholipid hydroperoxide glutathione peroxidase [Homo sapiens]	emb|CAA50793.1|	100%	39	275
HCOMD61	HCOMD61	1076	blastx.2	(AF047470) malate	gb|AAC03787.1|	87%	1	216

	R			dehydrogenase precursor [Homo sapiens]		75%	240	287
HCOMF52	HCOMF52R	1078	blastx.2	hypothetical protein 384D8_6 [Homo sapiens]	gb|AAB03345.1|	80%	14	655
HCOMG28	HCOMG28R	1079	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	71% 100%	100 54	522 98
HCOMG40	HCOMG40R	1080	blastx.2	ribosomal protein L15 [Rattus norvegicus]	emb|CAA55026.1|	76%	35	646
HCOMI30	HCOMI30R	1083	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	85%	315	491
HCOMI37	HCOMI37R	1084	blastx.2	similar to 40S ribosomal protein; cDNA EST CEMSA13F comes from 1 1 gene; cDNA EST EMBL:M79582 comes from this gene; cDN	emb|CAA86061.1|	59% 66% 64%	304 89 518	540 301 568
HCOML11	HCOML11R	1085	blastx.2	fused-ccdB [Escherichia coli]	emb|CAA71575.1|	90%	273	470
HCOMM55	HCOMM55R	1087	blastx.2	The polymorphysm (RFLP) of this gene is associated with 1 1	dbj|BAA03853.1|	100%	298	176
HCOMO58	HCOMO58R	1088	blastx.2	(AF042857) lung cancer antigen NY-LU-12 variant A [Homo	gb|AAC05826.1|	98%	4	282

				sapiens]					
HCOMW52	HCOMW52 RP00B	1089	blastx.2	(AB032025) ubiquitin [Canis familiaris]	dbj|BAA83996.1|	99%	60	443	
HCOMX77	HCOMX77 R	1090	blastx.2	HETEROGENEOUS NUCLEAR RIBONUCLEOPROTE IN A1 1 (HNRNP CORE PROTEIN A1).	sp|P09651|ROA1_HUMAN	65%	133	315	
						96%	5	82	
						100%	81	122	
						57%	5	82	
						53%	8	76	
						48%	5	82	
						34%	142	291	
						57%	11	82	
						62%	81	128	
						44%	5	82	
						45%	11	79	
						75%	81	116	
						50%	84	119	
HCONC18	HCONC18 RP00B	1091	blastx.2	cathepsin D [Homo sapiens]	gb|AAA51922.1|	87%	3	188	
						91%	190	333	
						83%	335	424	
						71%	426	467	
HCONK56	HCONK56 R	1093	blastx.2	ribosomal protein L18 [Homo sapiens]	gb|AAA16329.1|	100%	104	616	
						57%	567	665	
HCONL49	HCONL49 R	1095	blastx.2	ribosomal protein S13 [Homo sapiens]	dbj|BAA13528.1|	98%	3	221	
HCONO17	HCONO17 R	1099	blastx.2	(AC004240) match to Z43555 (NID:g572788) [Homo sapiens]	gb|AAC04502.1|	81%	4	69	
						71%	65	148	
HCONO25	HCONO25 R	1100	blastx.2	5,10-methenyltetrahydrofolate synthetase [Homo	gb|AAC41945.1|	77%	251	610	
						87%	147	245	
						100%	3	68	

				sapiens]		51%	481	579
HCONP44	HCONP44R	1101	blastx.2	H+-transporting ATP synthase (EC 3.6.1.34) 58K chain - human	pir|A33281|A33281	96% 66%	3 391	398 426
HCONR31	HCONR31 R	1104	blastx.2	ezrin (AA 1-586) [Homo sapiens]	emb|CAA35893.1|	98%	3	281
HCONU03	HCONU03 R	1105	blastx.2	glyceraldehyde 3-phosphate dehydrogenase (EC 1.2.1.12) [Homo sapiens]	gb|AAA52496.1|	92% 92% 53%	3 511 611	518 627 688
HCONW62	HCONW62 R	1106	blastx.2	Human tetracycline transporter-like protein mRNA [Homo sapiens]	emb|CAA92577.1|	77% 85% 69% 36%	1 330 529 6	297 473 645 119
HCOOG32	HCOOG32 R	1111	blastx.2	ornithine decarboxylase antizyme [Homo sapiens]	dbj|BAA13497.1|	97%	5	334
HCOOG37	HCOOG37 R	1112	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	92%	78	482
HCOOI71	HCOOI71R	1114	blastx.2	calpactin I light chain [Bos taurus]	gb|AAA30423.1|	100%	64	354
HCOOI79	HCOOI79R	1115	blastx.2	beta-subunit [Bos taurus]	emb|CAA29094.1|	77% 50%	215 681	703 740
HCOOM18	HCOOM18 R	1116	blastx.2	keratin 18 [Homo sapiens]	gb|AAA59461.1|	95% 100%	14 616	640 690
HCOOM73	HCOOM73 R	1117	blastx.2	claudin-10 [Homo sapiens]	gb|AAC79506.1|	90%	26	694
HCOOQ46	HCOOQ46	1118	blastx.2	protein-tyrosine	emb|CAA48338.1|	100%	2	166

	R			phosphatase [Homo sapiens]				
HCOOT43	HCOOT43R	1120	blastx.2	neutral protease alpha subunit [Homo sapiens]	gb|AAA35646.1|	100%	95	439
HCOOT68	HCOOT68R	1121	blastx.2	(AF019661) zeta proteasome chain; PSMA5 [Mus musculus]	gb|AAC69149.1|	99% 77%	171 473	470 652
HCOOU56	HCOOU56R	1122	blastx.2	(AF143815) ribosomal protein [Bos taurus]	gb|AAD33912.1|AF143815_1	55% 62% 52%	30 233 698	515 406 748
HCOOW72	HCOOW72R	1123	blastx.2	keratin 18 [Homo sapiens]	gb|AAA59461.1|	78%	49	552
HCOOX48	HCOOX48R	1126	blastx.2	(AF095770) PTH-responsive osteosarcoma D1 protein [Homo sapiens]	gb|AAD25980.1|AF095770_1	87% 83%	218 330	310 365
HCOOY43	HCOOY43R	1127	blastx.2	THIOREDOXIN PEROXIDASE 1 (THIOREDOXIN-DEPENDENT PEROXIDE 1 (NATURAL KILLER CELL ENHANCING FACTOR B) (NKEF-B).	sp|P32119|TDX1_HUMAN	91%	22	426
HCOPB03	HCOPB03R	1129	blastx.2	ribosomal protein L19 - rat	pir|A56846|A56846	98% 62%	11 367	367 573

HCOPC45	HCOPC45R	1130	blastx.2	homologue of yeast IPP isomerase [Homo sapiens]	emb|CAA34890.1|	96%	3	89	
HCOPD67	HCOPD67R	1131	blastx.2	ubiquitin conjugating-protein [Oryctolagus cuniculus]	gb|AAA31492.1|	91%	104	541	
HCOPE27	HCOPE27R	1132	blastx.2	serine protease homolog=NES1 [human, mammary epithelial cells, 76N, Peptide, 276 aa] [Homo sapiens]	gb|AAB46780.1|	99%	2	400	
HCOPI09	HCOPI09R A	1134	blastx.2	fused; toxic gene [synthetic construct]	emb|CAA67127.1|	77%	62	310	
HCOPO34	HCOPO34R	1136	blastx.2	(AF026246) HERV-E envelope glycoprotein [Homo sapiens]	gb|AAC52076.1|	65%	122	337	
HCOPO88	HCOPO88R	1138	blastx.2	'human homologue of rat ribosomal protein L9' [Homo sapiens]	dbj|BAA03401.1|	74%	4	507	
HCOPV41	HCOPV41R	1139	blastx.2	MEMD protein [Homo sapiens]	emb|CAA71256.1|	97%	3	593	
HCOPZ15	HCOPZ15R	1140	blastx.2	(AL031228) dJ1033B10.9 (Short-chain alcohol dehydrogenase family member (HKE6, RING2)) [Homo	emb|CAA20237.1|	96% 83%	7 572	579 625	

				sapiens]				
HCOQA38	HCOQA38R	1141	blastx.2	hBD-1 [Homo sapiens]	emb|CAA63405.1|	100%	68	271
HCOQB12	HCOQB12R	1143	blastx.2	(AC005600) tuberin [Homo sapiens]	gb|AAC34210.1|	100% 84%	4 308	309 346
HCOQD29	HCOQD29R	1147	blastx.2	S3 ribosomal protein [human, colon, Peptide, 243 aa] [Homo sapiens]	gb|AAB19349.1|	93% 55% 60%	16 552 632	588 707 730
HCOQD38	HCOQD38R	1148	blastx.2	HMG1 protein (AA 1 - 215) [Bos taurus]	emb|CAA31284.1|	95%	112	636
HCOQD49	HCOQD49R	1149	blastx.2	H+-transporting ATP synthase (EC 3.6.1.34) gamma chain precursor - bovine	pir|A32019|PWBOG	89% 65%	35 513	532 692
HCOQG37	HCOQG37R	1151	blastx.2	1-8D [Homo sapiens]	emb|CAA40625.1|	99% 100%	51 386	386 409
HCOQH46	HCOQH46R	1153	blastx.2	mucin MUC5B [Homo sapiens]	gb|AAC51343.1|	100% 64%	95 324	343 365
HCOQJ06	HCOQJ06R	1156	blastx.2	37kD Laminin receptor precursor /p40 ribosomal associated protein [Gallus gallus]	emb|CAA64147.1|	85% 58%	26 352	361 474
HCOQJ07	HCOQJ07R	1157	blastx.2	laminin-binding protein [Homo sapiens]	gb|AAA36161.1|	88%	6	656
HCOQJ79	HCOQJ79R	1159	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	83%	1	471
HCOQK86	HCOQK86R	1160	blastx.2	(AF038129) polyubiquitin [Ovis	gb|AAB92373.1|	94% 94%	4 4	456 456

				aries]				
						93%	28	456
						97%	4	255
						56%	440	487
						30%	440	556
						30%	440	556
HCOQL87	HCOQL87R	1161	blastx.2	glutathione S-transferase-pi [Homo sapiens]	gb|AAA56823.1|	56%	24	521
						41%	328	630
HCOQM87	HCOQM87R	1162	blastx.2	DRPLA protein [Mus musculus]	dbj|BAA13450.1|	52%	3	278
						47%	17	307
HCOQO79	HCOQO79R	1163	blastx.2	TIMP [Homo sapiens]	emb|CAA00898.1|	99%	2	574
						61%	561	608
HCOQP32	HCOQP32R	1164	blastx.2	elongation factor 1-alpha [Homo sapiens]	gb|AAA52367.1|	95%	15	149
						64%	151	381
HCOQS11	HCOQS11R	1165	blastx.2	acidic ribosomal phosphoprotein (P2) [Homo sapiens]	gb|AAA36472.1|	78%	102	398
HCOQU92	HCOQU92R	1167	blastx.2	protein translocation complex beta subunit [Canis familiaris]	gb|AAA19639.1|	100%	91	270
						100%	272	301
HCOQV27	HCOQV27R	1168	blastx.2	B4-2 protein [Homo sapiens]	gb|AAA85576.1|	96%	3	239
HCOQX38	HCOQX38R	1169	blastx.2	catechol O-methyltransferase [Homo sapiens]	emb|CAA81263.1|	96%	32	421
						91%	421	489
						80%	495	539
						100%	1	30
HCOQY33	HCOQY33R	1170	blastx.2	(AB000910) ribosomal protein [Sus scrofa]	dbj|BAA19210.1|	96%	49	321
HCOQZ86	HCOQZ86	1173	blastx.2	MHC class II HLA-	gb|AAA59782.1|	92%	106	357

	R			DR-beta-1 [Homo sapiens]		77%	351	470
HCORB20	HCORB20R	1175	blastx.2	(AB012122) TIP49 [Homo sapiens]	dbj|BAA28169.1|	98%	68	292
HCORB66	HCORB66R	1177	blastx.2	ribosomal protein L28 [Homo sapiens]	gb|AAA85657.1|	94%	75	482
HCORI18	HCORI18R	1178	blastx.2	hnRNP B1 protein [Homo sapiens]	dbj|BAA06031.1|	100% 100% 56% 49% 50% 44% 43% 39%	120 2 126 123 129 120 132 2	317 124 305 305 305 317 317 124
HCORI25	HCORI25R	1179	blastx.2	pm5 protein [Homo sapiens]	emb|CAA40655.1|	98%	3	419
HCQCR82	HCQCR82R	1180	blastx.2	NADH dehydrogenase subunit 3 [Homo sapiens]	dbj|BAA77672.1|	91% 90%	3 247	245 276
HCRME42	HCRME42R	1181	blastx.2	IGF binding protein-2 [Sus scrofa]	gb|AAC48728.1|	87% 59% 47%	1 297 332	369 416 427
HDABR53	HDABR53R	1182	blastx.2	ribosomal protein L23a [Homo sapiens]	gb|AAA03341.1|	97%	38	463
HDTAQ74	HDTAQ74R	1185	blastx.2	(AF112208) 13kDa differentiation-associated protein [Homo sapiens]	gb|AAF17196.1|AF112208_1	61% 90% 53% 100%	115 38 326 273	408 136 409 293
HDTBP08	HDTBP08R	1186	blastx.2	UbcH5C [Homo sapiens]	gb|AAA91461.1|	97%	255	470

HDTDB88	HDTDB88R	1188	blastx.2	cytochrome c oxidase subunit 1 [Pan troglodytes]	dbj|BAA85270.1|	89% 88%	27 259	275 441
HE8QX44	HE8QX44R	1190	blastx.2	(AF010472) alpha-amidating monooxygenase [Homo sapiens]	gb|AAD01439.1|	93% 95% 80%	49 272 475	288 475 549
HE9QU94	HE9QU94R	1191	blastx.2	alligator Wilm's tumour protein [Alligator mississippiensis]	emb|CAA59735.1|	100%	3	170
HEAHF02	HEAHF02R	1192	blastx.2	(AC004044) predicted protein of unknown function [Arabidopsis thaliana]	gb|AAD15346.1|	37%	62	376
HEEAY40	HEEAY40R	1193	blastx.2	hypothetical protein 2 (rRNA external transcribed spacer) - 1	pir|S12206|S12206	100%	3	128
HEGAF68	HEGAF68R	1194	blastx.2	URF 3 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24033.1|	89% 89%	3 178	179 321
HFABK01	HFABK01R	1196	blastx.2	NADH dehydrogenase subunit 2 [Homo sapiens]	dbj|BAA07291.1|	80% 69%	2 186	190 284
HFIBG63	HFIBG63R	1198	blastx.2	cytokine SDF-1-beta [Homo sapiens]	gb|AAA97434.1|	96%	152	406
HFIJB15	HFIJB15R	1199	blastx.2	cytochrome oxidase subunit II [Homo sapiens]	gb|AAA20843.1|	93%	2	517
HFIXK57	HFIXK57R	1200	blastx.2	URF 3 (NADH dehydrogenase subunit)	emb|CAA24033.1|	90%	5	325

HFIZQ64	HFIZQ64R	1201	blastx.2	(AK001601) unnamed protein product [Homo sapiens]	dbj|BAA91782.1|	100%	48	137
HFKKK36	HFKKK36R	1202	blastx.2	neutral calponin [Homo sapiens]	dbj|BAA12090.1|	96%	3	86
HFPEC93	HFPEC93R	1203	blastx.2	URF 2 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24027.1|	87% 90%	66 1	527 66
HFPIX37	HFPIX37R	1204	blastx.2	(AL137696) hypothetical protein [Homo sapiens]	emb|CAB70878.1|	51% 41%	4 1	240 258
HFTDK36	HFTDK36R	1205	blastx.2	folate-binding protein precursor [Homo sapiens]	gb|AAA35822.1|	100% 38%	90 341	290 514
HFVIB28	HFVIB28R	1206	blastx.2	fused-ccdB [Escherichia coli]	emb|CAA71575.1|	70%	26	175
HFXGR60	HFXGR60R	1207	blastx.2	(AF034746) LNXp70 [Mus musculus]	gb|AAC40076.1|	56%	347	57
HHAUD07	HHAUD07R	1208	blastx.2	GTP-binding regulatory protein Gs alpha chain isoform - 1	pir|JH0813|JH0813	75%	337	459
HHBFO21	HHBFO21R	1209	blastx.2	URF 3 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24033.1|	83% 82% 64%	3 248 205	236 328 246
HHEVG50	HHEVG50R	1210	blastx.2	CAG-isl 7 [Homo sapiens]	gb|AAC16021.1|	93%	13	474
HHFGQ65	HHFGQ65RA	1211	blastx.2	(AJ249731) putative G8.1 protein [Homo	emb|CAB56506.1|	81% 77%	107 25	319 129

				sapiens]				
HHSFG15	HHSFG15R	1213	blastx.2	(AF014888) NADH dehydrogenase subunit 2 [Homo sapiens]	gb|AAC25447.1|	78%	3	743
HHSGP15	HHSGP15R	1214	blastx.2	cytochrome oxidase subunit III [Talpa europaea]	emb|CAB71165.1|	74% 62%	2 517	529 717
HHSGQ17	HHSGQ17 R	1215	blastx.2	cytochrome b [Homo sapiens]	gb|AAA19775.1|	89%	79	435
HKBAD05	HKBAD05 R	1216	blastx.2	(AB015335) HRIHFB2072 [Homo sapiens]	dbj|BAA88116.1|	84% 100%	61 324	351 356
HKZAE07	HKZAE07R	1218	blastx.2	Na+, K+-ATPase beta-subunit precursor [Sus scrofa]	gb|AAA31002.1|	100%	1	138
HKZAI14	HKZAI14R	1220	blastx.2	keratin 18 [Homo sapiens]	gb|AAA59461.1|	100%	3	368
HKZAI68	HKZAI68R A	1221	blastx.2	antigen [Homo sapiens]	gb|AAA02999.1|	100%	2	79
HKZAQ39	HKZAQ39 R	1222	blastx.2	ubiquitin-conjugating enzyme UbcH7 [Homo sapiens]	emb|CAA63538.1|	100%	19	480
HKZAR58	HKZAR58 R	1223	blastx.2	(AC005545) AP-3 complex delta subunit, partial CDS [Homo 1	gb|AAC34214.1|	98%	3	266
HKZAS59	HKZAS59R	1224	blastx.2	ATP synthase beta subunit precursor [Homo sapiens]	gb|AAA51809.1|	100%	1	462
HKZAS64	HKZAS64R	1225	blastx.2	nephropontin [Homo	gb|AAA17675.1|	98%	1	276

				sapiens]				
HKZAS84	HKZAS84R	1226	blastx.2	calpain II regulatory subunit (EC 3.4.22.17) [Bos taurus]	gb|AAA30422.1|	100%	2	103
HKZAV69	HKZAV69R	1227	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	100%	8	412
HKZAV72	HKZAV72R	1228	blastx.2	fibronectin precursor [Homo sapiens]	emb|CAA26536.1|	100%	2	163
HKZBB22	HKZBB22R	1230	blastx.2	(AB015610) ribosomal protein S4X [Chlorocebus aethiops]	dbj|BAA36501.1|	100%	8	520
HKZBS89	HKZBS89R	1231	blastx.2	ferritin heavy subunit [Homo sapiens]	gb|AAA35830.1|	100%	1	381
HLDQQ80	HLDQQ80R	1232	blastx.2	ATPase subunit 6 [Papio hamadryas]	emb|CAA76999.1|	74% 54%	2 153	142 257
HLDXE19	HLDXE19R	1233	blastx.2	neuron-restrictive silencer factor [Homo sapiens]	gb|AAC50115.1|	80%	17	187
HLICD55	HLICD55R	1234	blastx.2	glutamine:fructose-6-phosphate amidotransferase [Homo sapiens]	gb|AAA58502.1|	96%	56	148
HLJBI37	HLJBI37R	1236	blastx.2	H(+)-transporting ATP synthase [Bos taurus]	emb|CAA45865.1|	100% 65% 80% 60% 88%	165 329 83 481 450	335 610 187 555 476
HLTHA47	HLTHA47R	1237	blastx.2	100 kDa protein [Rattus norvegicus]	emb|CAA45756.1|	82% 88%	187 380	393 406

HLTJA50	HLTJA50R	1238	blastx.2	(AK002071) unnamed protein product [Homo sapiens]	dbj|BAA92068.1|	63%	334	723
HLYDI57	HLYDI57R	1241	blastx.2	URF 1 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24026.1|	90%	2	565
HMCFO19	HMCFO19 R	1242	blastx.2	hypothetical 18K protein - goldfish mitochondrion	pir|JC1348|JC1348	46%	104	361
HMCIZ44	HMCIZ44R	1243	blastx.2	URF 2 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24027.1|	86% 74% 40%	1 377 207	342 517 389
HMCJE25	HMCJE25R	1244	blastx.2	cytochrome oxidase subunit I [Hylobates lar]	emb|CAA67630.1|	82% 77%	3 298	314 351
HMSPB25	HMSPB25R	1245	blastx.2	alcohol dehydrogenase [Homo sapiens]	gb|AAA51596.1|	75%	315	172
HMVBB04	HMVBB04 R	1246	blastx.2	cytochrome-c oxidase (EC 1.9.3.1) chain I - western lowland 1	pir|C59153|C59153	86%	73	201
HNAAE01	HNAAE01 R	1247	blastx.2	(AP000616) similar to RING-H2 finger protein RHA1a (AF078683) [Oryza sativa]	dbj|BAA85438.1|	67% 67% 100% 100% 100% 100% 100% 100% 100%	95 96 90 89 92 91 93 94 91	196 197 155 154 157 156 158 159 153
HNBUY37	HNBUY37	1249	blastx.2	smooth muscle myosin	gb|AAB28951.1|	95%	77	289

	R			heavy chain isoform SM1 [human, umbilical 1				
HNBVL57	HNBVL57R	1250	blastx.2	growth-arrest-specific protein 2 [Homo sapiens]	gb|AAC52058.1|	74% 55%	242 70	514 384
HNHBC18	HNHBC18R	1251	blastx.2	OS9 [Homo sapiens]	gb|AAC39523.1|	100% 41% 46% 35%	1 245 315 244	243 403 404 435
HNJFE85	HNJFE85R	1252	blastx.2	(AL031670) dJ681N20.2 (similar to FTLL1(ferritin, light 1	emb|CAB43181.1|	97%	224	451
HNKCO29	HNKCO29R	1253	blastx.2	(AF044957) NADH:ubiquinone oxidoreductase B15 subunit [Homo sapiens]	gb|AAD05421.1|	95%	52	390
HNOAA22	HNOAA22R	1254	blastx.2	acidic ribosomal phosphoprotein (P1) [Homo sapiens]	gb|AAA36471.1|	91%	114	422
HNOAB88	HNOAB88R	1257	blastx.2	actin 2 protein [Strongylocentrotus purpuratus]	gb|AAA30032.1|	83% 81%	3 509	491 541
HNOAC15	HNOAC15R	1259	blastx.2	unnamed protein product [unidentified]	emb|CAB42187.1|	93%	1	87
HNOAE50	HNOAE50R	1260	blastx.2	ribosomal protein L21 [Homo sapiens]	emb|CAA61582.1|	98%	98	577
HNOAE65	HNOAE65R	1261	blastx.2	ribosomal protein L26 [Homo sapiens]	emb|CAA49189.1|	100%	101	535

HNOAF22	HNOAF22 R	1262	blastx.2	ribosomal protein L21 [Homo sapiens]	emb|CAA61582.1|	100%	76	555
HNOAG34	HNOAG34 R	1264	blastx.2	collagen alpha 1(I) chain - bovine (fragments)	pir|A91193|CGBO1S	64%	54	239
						72%	1	108
						75%	221	319
						37%	3	239
						67%	221	313
						39%	21	239
						44%	54	236
						36%	15	236
						37%	15	236
						44%	72	239
						39%	21	239
						42%	12	236
						38%	3	236
						38%	15	239
						45%	84	236
						48%	99	239
						35%	15	236
						41%	54	239
						35%	6	239
						36%	3	239
						62%	233	319
						42%	69	239
						47%	93	236
						36%	15	239
						38%	3	200
						45%	93	236
						35%	15	239
						38%	54	239

239	93	44%					
236	6	41%					
239	3	37%					
236	69	41%					
236	6	35%					
239	15	34%					
239	84	44%					
322	218	48%					
239	6	35%					
236	21	36%					
239	15	33%					
239	3	36%					
239	3	32%					
319	218	48%					
239	54	36%					
322	227	52%					
236	15	35%					
328	233	50%					
328	233	54%					
322	227	51%					
239	111	46%					
319	218	47%					
236	21	33%					
322	233	53%					
316	233	57%					
239	114	42%					
316	233	57%					
316	233	53%					
328	227	50%					
328	227	51%					

						38%	69	239
						33%	3	236
						53%	233	316
						59%	1	96
						36%	93	239
						45%	233	358
						51%	227	319
						50%	227	322
						45%	221	319
						47%	218	319
						51%	233	319
						45%	212	316
						46%	227	316
						46%	221	316
						50%	233	322
						44%	221	322
						44%	230	328
						45%	227	328
						44%	1	108
						38%	93	239
						45%	227	322
						50%	227	316
						50%	233	316
						50%	227	316
						50%	230	319
						43%	227	319
						46%	233	322
						46%	221	316
						48%	233	319
						46%	227	316

322	233	50%					
316	227	51%					
316	233	50%					
316	227	41%					
316	233	50%					
322	233	46%					
322	227	46%					
328	242	44%					
319	212	41%					
316	227	46%					
322	233	46%					
105	1	45%					
322	230	44%					
123	1	39%					
322	209	42%					
316	260	63%					
319	227	45%					
105	1	44%					
108	1	41%					
316	227	43%					
114	1	42%					
105	1	42%					
105	1	44%					
316	233	46%					
316	221	39%					
93	1	45%					
322	227	45%					
93	1	41%					
108	1	38%					
322	233	46%					

						43%	233	322
						42%	221	316
						41%	1	108
						39%	1	114
						38%	1	108
						40%	1	108
						40%	212	316
						41%	221	322
						36%	1	108
						38%	1	108
						43%	233	328
						38%	227	316
						43%	227	316
						43%	233	322
						40%	221	316
						37%	1	105
						38%	1	108
						43%	227	316
						38%	1	93
						47%	227	316
						41%	1	93
						40%	221	316
						38%	227	316
						38%	227	316
						41%	1	93
						38%	1	93
						36%	1	108
						38%	218	316
						63%	260	316
						37%	1	105

						35%	1	108
						36%	1	108
						33%	1	108
						38%	227	316
						43%	227	316
						40%	221	316
						38%	1	108
						64%	321	362
						34%	1	105
						41%	1	108
						41%	1	108
						35%	1	93
						31%	1	123
						40%	212	322
						50%	1	66
						36%	1	105
						41%	1	93
						35%	1	93
						37%	1	105
						37%	1	105
						36%	1	108
						37%	221	328
						34%	1	105
						36%	212	316
						39%	233	316
						38%	1	93
						40%	1	105
						38%	1	93
						38%	1	108
						36%	1	108

93	1	41%					
108	1	38%					
108	1	33%					
114	1	31%					
105	1	37%					
108	1	33%					
322	233	40%					
93	1	35%					
105	1	31%					
105	1	34%					
316	230	37%					
316	227	40%					
93	1	38%					
108	1	33%					
96	1	37%					
316	218	39%					
123	1	31%					
316	233	38%					
105	1	36%					
108	1	38%					
316	233	39%					
322	233	40%					
93	1	38%					
108	1	36%					
105	1	37%					
322	233	36%					
93	1	32%					
108	1	33%					
108	1	30%					
93	1	35%					

						33%	1	108
						30%	1	108
						38%	218	316
						35%	227	316
						38%	1	108
						31%	1	105
						35%	1	93
						34%	233	319
						36%	233	322
						39%	221	322
						35%	233	316
						36%	1	66
						35%	233	316
						34%	233	319
						38%	238	71
						34%	250	20
						45%	357	226
						38%	238	86
						44%	357	214
						48%	321	223
						39%	235	77
						50%	318	223
						48%	318	226
						37%	238	50
						35%	238	71
						39%	199	71
						47%	238	86
						46%	321	226
						47%	318	214
						45%	318	214

				37%	238	86	
				30%	238	80	
				45%	318	220	
				42%	360	226	
				48%	318	226	
				31%	238	71	
				51%	318	214	
				26%	253	68	
				50%	199	104	
				38%	238	98	
				46%	315	226	
				46%	315	226	
				44%	357	226	
				38%	238	104	
				37%	238	92	
				45%	318	226	
				40%	357	226	
				43%	318	223	
				39%	238	71	
				44%	318	214	
				39%	354	226	
				46%	318	223	
				44%	357	223	
				41%	238	104	
				35%	238	71	
				38%	238	71	
				34%	238	77	
				45%	318	217	
				44%	315	214	
				43%	321	214	

44%	321	223				
39%	238	98				
35%	238	71				
47%	318	214				
42%	321	214				
33%	238	71				
36%	238	71				
50%	315	226				
40%	318	223				
44%	321	226				
35%	238	71				
33%	238	71				
35%	238	71				
34%	235	71				
35%	238	68				
35%	244	92				
38%	238	92				
33%	238	71				
35%	238	98				
35%	238	98				
35%	238	71				
45%	318	226				
47%	318	226				
47%	318	226				
45%	318	226				
43%	321	226				
42%	318	217				
36%	330	223				
44%	321	223				
44%	321	217				

89	235	34%				
217	318	43%				
217	318	40%				
220	318	41%				
214	330	35%				
71	238	41%				
3	65	47%				
226	330	40%				
226	318	41%				
223	318	37%				
214	318	37%				
226	318	44%				
226	321	39%				
226	318	38%				
226	321	43%				
226	321	40%				
226	312	41%				
226	315	40%				
223	315	39%				
214	321	44%				
271	318	56%				
226	321	50%				
220	321	40%				
223	321	38%				
226	357	34%				
226	315	40%				
226	318	38%				
226	318	38%				
271	318	52%				
226	318	35%				

						38%	56	3
						33%	65	3
HNOAH67	HNOAH67R	1266	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	87%	2	358
HNOAJ67	HNOAJ67R	1267	blastx.2	(AB000911) ribosomal protein [Sus scrofa]	dbj|BAA19211.1|	100%	69	524
HNOAL51	HNOAL51R	1270	blastx.2	(AD001528) spermidine aminopropyltransferase [Homo sapiens]	gb|AAB61308.1|	72%	70	255
						75%	3	74
HNOAO71	HNOAO71R	1273	blastx.2	MAP kinase kinase [Homo sapiens]	gb|AAA36318.1|	98%	62	283
HNOAP21	HNOAP21R	1274	blastx.2	Q1Z 7F5 [Homo sapiens]	gb|AAA36021.1|	91%	20	667
HNOAQ24	HNOAQ24R	1275	blastx.2	epoxide hydrolase [Homo sapiens]	gb|AAA52390.1|	89%	2	571
HNOAQ47	HNOAQ47R	1276	blastx.2	TAXREB107 [Homo sapiens]	dbj|BAA04491.1|	99%	1	618
HNOAR85	HNOAR85R	1278	blastx.2	(AF161378) HSPC260 [Homo sapiens]	gb|AAF28938.1|AF161378_1	88%	287	562
						92%	99	290
HNOAS07	HNOAS07R	1279	blastx.2	scar protein [Homo sapiens]	gb|AAA36597.1|	97%	96	521
						97%	1	108
HNOAS36	HNOAS36R	1280	blastx.2	proteoglycan core protein [Homo sapiens]	gb|AAB00774.1|	100%	3	254
HNOAS92	HNOAS92R	1281	blastx.2	glutathione transferase M1 [Homo sapiens]	gb|AAA59203.1|	100%	2	385
HNOAT76	HNOAT76R	1283	blastx.2	(AB016193) transcription factor	dbj|BAA36616.1|	100%	2	187

				[Homo sapiens]				
HNOAV91	HNOAV91 R	1284	blastx.2	ribosomal protein L28 [Homo sapiens]	gb|AAA85657.1|	99%	29	439
HNOBE83	HNOBE83 R	1286	blastx.2	translation initiation factor eIF3 p40 subunit [Homo sapiens]	gb|AAD03465.1|	100% 60% 79%	2 525 694	598 692 765
HNOBV55	HNOBV55 RA	1287	blastx.2	ribosomal protein L12 [Homo sapiens]	gb|AAA36157.1|	100% 74%	171 65	506 217
HNOCE63	HNOCE63 R	1288	blastx.2	(AF083217) WD repeat protein WDR3 [Homo sapiens]	gb|AAD45865.1|AF083217_1	68% 30% 45%	2 442 393	388 819 557
HNOCL43	HNOCL43 R	1289	blastx.2	alpha-1 type III collagen [Homo sapiens]	gb|AAA52002.1|	98%	2	193
HNOCN02	HNOCN02 R	1290	blastx.2	TARBP-b gene product [Homo sapiens]	gb|AAA91344.1|	91%	7	666
HNOCN10	HNOCN10 R	1291	blastx.2	(AF043254) heat shock protein 75 [Homo sapiens]	gb|AAC02679.1|	90% 40% 100%	4 488 435	423 622 464
HNOCR44	HNOCR44 R	1292	blastx.2	ribosomal protein L7a large subunit [Homo sapiens]	gb|AAA60282.1|	80%	3	440
HNOCU03	HNOCU03 R	1293	blastx.2	translational elongation factor-1 alpha [Danio rerio]	emb|CAA54771.1|	74%	40	360
HNODG11	HNODG11 R	1295	blastx.2	tumor protein (AA 1 - 172) [Homo sapiens]	emb|CAA34200.1|	71% 70% 66% 85%	93 262 482 552	362 498 580 611

HNOJA93	HNOJA93R	1298	blastx.2	general transcription factor [Homo sapiens]	emb|CAA37375.1|	100%	1	453
HNOJB10	HNOJB10R	1299	blastx.2	(AF110731) antioxidant enzyme B166 [Homo sapiens]	gb|AAF03750.1|AF110731_1	98% 53% 54%	11 384 418	376 521 480
HNOJB57	HNOJB57R	1300	blastx.2	midkine [Homo sapiens]	dbj|BAA01457.1|	74%	92	520
HNOJH48	HNOJH48R	1304	blastx.2	(AF077054) unr protein [Homo sapiens]	gb|AAD27787.1|AF077054_1	100%	2	283
HNOJH52	HNOJH52R	1305	blastx.2	S-adenosylhomocysteine hydrolase [Homo sapiens]	gb|AAA51681.1|	100%	6	179
HNOJI82	HNOJI82R	1306	blastx.2	ubiquitin [synthetic construct]	gb|AAA57047.1|	94%	22	489
HNOJI85	HNOJI85R	1307	blastx.2	(AF035718) mesoderm-specific basic-helix-loop-helix protein; Pod-1 [Homo sapiens]	gb|AAC62514.1|	86%	13	513
HNOJJ20	HNOJJ20R	1308	blastx.2	ribosomal protein L23a [Homo sapiens]	gb|AAA03341.1|	98%	1	261
HNOJJ26	HNOJJ26R	1309	blastx.2	plasma gelsolin [Homo sapiens]	emb|CAA28000.1|	73%	2	568
HNOJK66	HNOJK66R	1310	blastx.2	von Willebrand factor prepropeptide [Homo sapiens]	gb|AAB59512.1|	90% 100% 26% 25% 25% 26%	1 408 16 13 307 91	459 491 396 324 402 405

						69%	218	256
						27%	319	399
						38%	343	402
						32%	16	171
HNOJM64	HNOJM64R	1312	blastx.2	alpha-tubulin III [Cricetulus griseus]	gb|AAA37026.1|	97%	3	428
HNOJO55	HNOJO55R	1313	blastx.2	Protein sequence and annotation available soon via Swiss-Prot; 1 [Homo sapiens]	emb|CAA62188.1|	93%	423	277
						100%	134	9
						66%	134	9
						53%	423	277
						40%	423	268
						48%	131	9
						36%	143	3
						37%	423	289
						39%	402	286
						44%	116	9
						30%	423	280
						33%	128	12
						28%	128	12
						23%	128	3
						30%	128	12
						42%	408	310
						32%	423	289
						35%	426	265
						27%	137	3
						37%	396	280
						30%	408	280
						22%	146	12
						35%	119	9
						41%	357	280

						28%	414	280
						34%	116	12
						37%	381	280
						25%	423	280
						23%	426	310
						27%	116	9
						35%	402	286
						35%	426	298
						28%	423	277
						28%	116	12
						39%	158	93
						31%	420	310
						35%	140	99
						25%	128	12
						43%	117	70
HNOJP42	HNOJP42R	1314	blastx.2	envelope protein [Homo sapiens]	gb|AAA88027.1|	71%	6	302
HNOJQ22	HNOJQ22R	1315	blastx.2	(AJ224875) glucosyltransferase [Homo sapiens]	emb|CAA12176.1|	100%	217	510
						100%	1	219
HNOKA20	HNOKA20R	1316	blastx.2	signal recognition particle subunit 14 [Homo sapiens]	emb|CAA51838.1|	97%	38	259
HNOKG34	HNOKG34R	1318	blastx.2	hnRNPcore protein A1 [Homo sapiens]	emb|CAA56072.1|	100%	43	510
						31%	52	324
HNOKI89	HNOKI89R	1323	blastx.2	(AF009368) Luman [Homo sapiens]	gb|AAB69652.1|	100%	2	370
HNOKT24	HNOKT24R	1326	blastx.2	ribosomal protein L6 [Homo sapiens]	emb|CAA49188.1|	89%	74	457
						68%	3	191
HNOKU52	HNOKU52	1327	blastx.2	ribosomal protein L29	gb|AAC50499.1|	98%	33	509

	R			[Homo sapiens]				
HNOKV82	HNOKV82R	1328	blastx.2	(AF081484) alpha-tubulin isoform 1 [Homo sapiens]	gb|AAC31959.1|	100%	3	488
HNORA56	HNORA56R	1330	blastx.2	MHC class I A [Pan troglodytes]	gb|AAA88855.1|	93% 91% 96%	2 348 289	289 494 363
HNORB68	HNORB68R	1331	blastx.2	high mobility group protein 17 [Homo sapiens]	gb|AAA52678.1|	95%	4	186
HNORC14	HNORC14R	1332	blastx.2	hevin [Homo sapiens]	emb|CAA57650.1|	90%	2	496
HNORD11	HNORD11R	1333	blastx.2	ribosomal protein L5 [Rattus norvegicus]	gb|AAA42074.1|	93% 91%	179 7	394 183
HNORE65	HNORE65R	1334	blastx.2	ORF [Pan troglodytes]	dbj|BAA01980.1|	83%	77	355
HNORF03	HNORF03R	1335	blastx.2	(AL031228) dJ1033B10.2 (WD40 protein BING4 (similar to S. 1 sapiens]	emb|CAA20229.1|	89% 83% 90%	70 529 357	357 582 386
HNORF04	HNORF04R	1336	blastx.2	(AF196481) RING finger protein; FXY2 [Homo sapiens]	gb|AAF07341.1|AF196481_1	91%	4	144
HNORF05	HNORF05R	1337	blastx.2	'human homologue of rat ribosomal protein L9' [Homo sapiens]	dbj|BAA03401.1|	98% 98%	2 321	319 485
HNORF13	HNORF13R	1338	blastx.2	TIMP [Homo sapiens]	emb|CAA00898.1|	74%	31	615
HNORH03	HNORH03R	1339	blastx.2	(AF110731) antioxidant enzyme	gb|AAF03750.1|AF110731_1	95%	3	641

				B166 [Homo sapiens]				
HNORH05	HNORH05 R	1340	blastx.2	ubiquitin conjugating-protein [Oryctolagus cuniculus]	gb|AAA31492.1|	100%	43	498
HNORJ08	HNORJ08R	1342	blastx.2	ATPase [Mus musculus]	gb|AAA88243.1|	90% 90% 38%	3 308 514	350 496 606
HOCMA02	HOCMA02 RA	1344	blastx.2	(AF016365) hexokinase I [Homo sapiens]	gb|AAC15862.1|	100% 65% 86% 50%	3 3 490 490	497 497 558 555
HOCMC08	HOCMC08 R	1347	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	89%	19	423
HOCMF27	HOCMF27 R	1349	blastx.2	sorbitol dehydrogenase [Homo sapiens]	gb|AAA66064.1|	100%	3	395
HOCMG37	HOCMG37 R	1352	blastx.2	chaperonin (HSP60) [Homo sapiens]	gb|AAA36022.1|	98% 36%	4 326	351 424
HOCMI62	HOCMI62R	1353	blastx.2	S19 ribosomal protein [Homo sapiens]	gb|AAA89070.1|	67%	64	384
HOCMJ47	HOCMJ47R	1354	blastx.2	ribosomal protein L18a [Homo sapiens]	gb|AAC18781.1|	98% 100%	4 413	378 439
HOCMK20	HOCMK20 R	1355	blastx.2	stathmin [Xenopus laevis]	emb|CAA50562.1|	77% 64%	80 363	379 500
HOCML06	HOCML06 R	1356	blastx.2	glyceraldehyde 3-phosphate dehydrogenase (EC 1.2.1.12) [Homo sapiens]	gb|AAA52496.1|	97%	123	707

HOCML66	HOCML66R	1357	blastx.2	(AK000779) unnamed protein product [Homo sapiens]	dbj|BAA91374.1|	85% 76%	2 217	211 330
HOCMM52	HOCMM52R	1358	blastx.2	glutathione transferase T1 [Homo sapiens]	emb|CAA55935.1|	98% 100%	133 24	594 137
HOCMS75	HOCMS75R	1360	blastx.2	plakoglobin [Homo sapiens]	emb|CAA92522.1|	88%	6	500
HOCMS87	HOCMS87R	1361	blastx.2	insulin-like growth factor binding protein 5 [Homo sapiens]	gb|AAA53505.1|	70%	151	615
HOCMY53	HOCMY53R	1363	blastx.2	(AF028832) Hsp89-alpha-delta-N [Homo sapiens]	gb|AAC25497.1|	97% 100% 43%	97 309 45	312 416 113
HOCMY61	HOCMY61R	1364	blastx.2	ribosomal protein S15a [Rattus norvegicus]	emb|CAA54918.1|	99%	80	466
HOCMY79	HOCMY79R	1365	blastx.2	fau [Homo sapiens]	emb|CAA46716.1|	100% 100%	317 115	511 315
HOCOC38	HOCOC38R	1366	blastx.2	HYPOTHETICAL PROTEIN (FRAGMENT).	sp|Q16465|YZA1_HUMAN	100%	388	23
HOCOC94	HOCOC94R	1368	blastx.2	protein phosphatase 2A (AA 1 - 309) [Oryctolagus cuniculus]	emb|CAA68732.1|	98% 84% 66%	3 490 566	485 567 628
HOCOF35	HOCOF35R	1369	blastx.2	(AF059486) putative actin-binding protein DOC6 [Mus musculus]	gb|AAC31808.1|	51% 81% 47% 29% 28% 31%	224 100 495 31 511 139	706 279 647 273 711 282

HOCOF50	HOCOF50R	1370	blastx.2	'FKBP52; 52 kD FK506 binding protein' [Homo sapiens]	gb|AAA36111.1|	72% 46% 55% 43%	2 38 396 472	460 532 632 561
HOCOO62	HOCOO62R	1371	blastx.2	Ro ribonucleoprotein autoantigen (Ro/SS-A) precursor [Homo sapiens]	gb|AAA36582.1|	77%	42	596
HOCOP52	HOCOP52R	1372	blastx.2	spliceosomal protein [Homo sapiens]	gb|AAA60300.1|	67% 34% 39% 30% 42%	2 68 388 441 522	631 301 621 626 620
HOCOQ13	HOCOQ13R	1373	blastx.2	probable transmembrane protein TMC - human	pir|S70029|S70029	94% 75%	94 482	474 541
HOCOT70	HOCOT70R	1375	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	97%	8	412
HOCPF69	HOCPF69R	1377	blastx.2	(AJ001701) deoxyhypusine synthase [Homo sapiens]	emb|CAA04940.1|	96% 72% 50%	1 347 396	351 412 455
HOCPH40	HOCPH40R	1380	blastx.2	3-oxoacyl-CoA thiolase propeptide (424 AA) [Homo sapiens]	emb|CAA31412.1|	100%	2	217
HOCPH44	HOCPH44R	1381	blastx.2	antisecretory factor-1 [Homo sapiens]	gb|AAB54057.1|	96% 48%	3 286	275 408
HOCPI53	HOCPI53R	1383	blastx.2	collagen (VI) alpha-1 chain [Homo sapiens]	emb|CAA67576.1|	76% 56% 100%	41 225 4	322 365 39

HOCPM39	HOCPM39 R	1385	blastx.2	pinin [Bos taurus]	gb|AAB48302.1|	86%	23	136
HOCPP65	HOCPP65R	1386	blastx.2	histone H2A.F [Gallus gallus]	emb|CAA32094.1|	85% 53%	63 350	314 445
HOCPP80	HOCPP80R	1387	blastx.2	isoleucyl-tRNA synthetase [Homo sapiens]	gb|AAA80153.1|	88%	3	563
HOCPQ59	HOCPQ59R	1389	blastx.2	(AF006012) dishevelled 2 [Homo sapiens]	gb|AAB65243.1|	84% 100%	38 5	394 52
HOCPQ66	HOCPQ66R	1390	blastx.2	clathrin-associated protein 17 [Rattus norvegicus]	gb|AAA40742.1|	100%	2	427
HOCPQ75	HOCPQ75R	1391	blastx.2	TIMP [Homo sapiens]	emb|CAA00898.1|	86%	26	646
HOCPR01	HOCPR01R	1392	blastx.2	alpha subunit (aa 1-394) [Bos taurus]	emb|CAA27137.1|	100% 91%	39 2	536 37
HOCPR29	HOCPR29R	1393	blastx.2	translation initiation factor [Homo sapiens]	emb|CAA56074.1|	96% 48% 40%	1 603 575	579 776 679
HOCPR53	HOCPR53R	1395	blastx.2	P311 HUM [Homo sapiens]	gb|AAA74903.1|	77%	86	268
HOCPR77	HOCPR77R	1397	blastx.2	similar to emb-5 protein of C.elegans. [Homo sapiens]	dbj|BAA11479.1|	92%	1	249
HOCPS35	HOCPS35R	1399	blastx.2	(AB017018) JKTBP2 [Homo sapiens]	dbj|BAA75239.1|	100%	3	203
HOCPU03	HOCPU03R	1400	blastx.2	dihydropyridine-sesitive L-type calcium channel alpha-2 subunit	gb|AAA41088.1|	65% 54%	7 441	456 512

				[Rattus norvegicus]				
HOCPU30	HOCPU30R	1401	blastx.2	KDEL receptor [Homo sapiens]	emb|CAA39371.1|	66% 69% 61%	342 139 242	518 267 334
HOCPU68	HOCPU68R	1402	blastx.2	preprocathepsin B [Homo sapiens]	gb|AAA52129.1|	98%	3	269
HOCPV29	HOCPV29R	1403	blastx.2	thrombin inhibitor [Homo sapiens]	emb|CAA80373.1|	58%	243	593
HOCPV67	HOCPV67R	1404	blastx.2	serine/threonine-protein kinase PRP4m [Mus musculus]	gb|AAB03269.1|	88% 87%	58 345	327 518
HOCPV72	HOCPV72R	1405	blastx.2	(AF132952) CGI-18 protein [Homo sapiens]	gb|AAD27727.1|AF132952_1	91% 84%	33 184	203 318
HOCPW56	HOCPW56R	1406	blastx.2	ARL3 [Homo sapiens]	gb|AAA21654.1|	100%	2	502
HOCPW81	HOCPW81R	1408	blastx.2	cysteine protease Mch2 isoform alpha [Homo sapiens]	gb|AAC50168.1|	91%	2	739
HOCPX01	HOCPX01R	1409	blastx.2	(AF052514) thymus specific serine peptidase [Homo sapiens]	gb|AAC33563.1|	73% 50% 87% 28%	129 113 566 483	440 571 589 587
HOCPZ76	HOCPZ76R	1411	blastx.2	(AF002705) beta prime COP [Rattus norvegicus]	gb|AAB88018.1|	99% 77%	2 423	421 524
HOCQA26	HOCQA26R	1413	blastx.2	interferon-inducible protein [Homo sapiens]	emb|CAA59337.1|	100% 71% 47%	205 410 360	378 571 473
HOCQA37	HOCQA37	1414	blastx.2	lactoyl glutathione	dbj|BAA02572.1|	100%	136	276

	R			lyase [Homo sapiens]		82%	63	131
HOCQA86	HOCQA86 R	1415	blastx.2	proteoglycan core protein [Homo sapiens]	gb|AAB00774.1|	91%	84	392
HOCQB18	HOCQB18 R	1416	blastx.2	general transcription factor [Homo sapiens]	emb|CAA37375.1|	99%	3	473
HOCQB48	HOCQB48 R	1417	blastx.2	Na+-independent neutral and basic amino acid transporter [Homo sapiens]	dbj|BAA11541.1|	97%	4	555
HOCQC71	HOCQC71 R	1419	blastx.2	calcium binding protein [Homo sapiens]	dbj|BAA23325.1|	98%	126	419
HOCQD10	HOCQD10 R	1420	blastx.2	ribosomal protein L12 [Homo sapiens]	gb|AAA36157.1|	88%	152	637
HOCQD19	HOCQD19 R	1421	blastx.2	retinoid X receptor alpha [Rattus norvegicus]	gb|AAA42093.1|	80% 56%	3 424	392 567
HOCQD42	HOCQD42 R	1423	blastx.2	(AF095257) heterogeneous nuclear ribonucleoprotein C1/C2; hnRNP C1/C2 [Mus musculus]	gb|AAD03717.1|	86% 65% 59% 53%	1 299 474 474	294 475 614 599
HOCQD45	HOCQD45 R	1424	blastx.2	glyceraldehyde-3-phosphate dehydrogenase (EC 1.2.1.12), euthermic tissue - desert jerboa	pir|JC5370|JC5370	91% 54% 100%	92 495 457	463 785 492
HOCQE35	HOCQE35 R	1425	blastx.2	ribosomal protein L7a large subunit [Homo sapiens]	gb|AAA60282.1|	74%	6	437

HOCQG94	HOCQG94R	1426	blastx.2	actin [Brugia malayi]	emb|CAB06627.1|	62% 58%	9 254	629 652
HOCQH81	HOCQH81R	1427	blastx.2	(AF038952) cofactor A protein [Homo sapiens]	gb|AAC39866.1|	91%	144	242
HOCQI31	HOCQI31R	1428	blastx.2	prostacyclin-stimulating factor, PGI2-stimulating factor, PSF 1 sapiens]	gb|AAB32370.1|	100%	1	324
HOCQM24	HOCQM24R	1430	blastx.2	hnRNPcore protein A1 [Homo sapiens]	emb|CAA56072.1|	100%	3	230
HODAF78	HODAF78R	1431	blastx.2	(AC004638) amyloid precursor protein-binding protein 1 (APP-B1) [Homo sapiens]	gb|AAC23784.1|	55%	8	274
HODCZ52	HODCZ52R	1434	blastx.2	tissue-specific secretory protein [synthetic construct]	emb|CAA01433.1|	66% 100%	26 216	133 233
HODDI57	HODDI57R	1435	blastx.2	(AF113514) histone acetyltransferase MORF [Homo sapiens]	gb|AAF00095.1|	96% 68% 36% 33% 35% 30% 25% 30% 27% 26% 37% 46%	6 164 12 12 45 39 30 24 36 13 81 53	167 304 158 170 164 164 176 164 146 168 161 91

HODER57	HODER57R	1440	blastx.2	Method: conceptual translation supplied by author [Homo sapiens]	gb|AAA91179.1|	66%	83	289
HODFC44	HODFC44RP00	1449	blastx.2	(AF216754) over-expressed breast tumor protein [Homo sapiens]	gb|AAF25683.1|AF216754_1	98%	1	207
HODFJ14	HODFJ14R	1453	blastx.2	Ran_GTP binding protein 5 [Homo sapiens]	emb|CAA70103.1|	100%	2	181
HODFO16	HODFO16R	1459	blastx.2	selenium donor protein [Homo sapiens]	gb|AAA87567.1|	100%	305	409
HODFO64	HODFO64R	1460	blastx.2	zinc finger protein ZNF136 [Homo sapiens]	gb|AAC50261.1|	78%	16	153
						70%	1	153
						70%	1	153
						64%	1	153
						66%	1	153
						71%	16	153
						58%	1	153
						58%	1	153
						60%	1	156
						58%	1	153
						58%	1	153
						58%	7	153
						54%	10	153
						75%	150	233
						67%	156	239
						77%	174	239
						90%	174	233
						62%	153	239

						45%	159			329
						63%	153			242
						80%	174			233
						60%	153			236
						54%	49			153
						51%	242			328
						70%	269			328
						55%	239			319
						60%	174			233
						43%	242			337
						81%	272			319
						54%	248			319
						32%	159			314
						34%	174			314
						48%	242			328
						52%	251			319
						41%	239			325
						41%	248			319
						37%	239			325
HODFP51	HODFP51R	1461	blastx.2	pre-mRNA splicing factor [Homo sapiens]	gb|AAA36648.1|	77%	74			439
						44%	104			436
HODFQ19	HODFQ19R	1462	blastx.2	DNA topoisomerase III [Homo sapiens]	gb|AAB03694.1|	89%	7			453
HODFQ37	HODFQ37R	1463	blastx.2	pancreatic peptidylglycine alpha-amidating monooxygenase, 1 1	gb|AAB32776.1|	92%	47			499
						93%	2			97
						25%	338			493
HODGB69	HODGB69R	1475	blastx.2	protein 4 [Homo sapiens]	gb|AAB58952.1|	89%	3			470
HODGH30	HODGH30	1478	blastx.2	IDN4-GGTR14	sp|Q9Y6Y5|Q9Y6Y5	90%	31			129

	R			PROTEIN.				
HODGH43	HODGH43R	1479	blastx.2	(AB005878) BYJ15 [Nicotiana tabacum]	dbj|BAA21615.1|	100% 28%	48 217	116 363
HODGH65	HODGH65R	1480	blastx.2	IDN4-GGTR14 PROTEIN.	sp|Q9Y6Y5|Q9Y6Y5	96%	41	127
HODGN53	HODGN53R	1482	blastx.2	(AF186461) ring finger protein Fxy [Rattus norvegicus]	gb|AAD56247.1|AF186461_1	39%	95	475
HODGQ52	HODGQ52R	1487	blastx.2	unnamed protein product [unidentified]	emb|CAB42187.1|	82% 25%	1 118	84 189
HODGW91	HODGW91R	1489	blastx.2	phosphofructokinase [Homo sapiens]	gb|AAA79220.1|	100% 93%	101 394	3 347
HODGZ63	HODGZ63R	1493	blastx.2	putative [Caenorhabditis elegans]	gb|AAA28195.1|	49% 57%	190 470	462 532
HODHD23	HODHD23R	1495	blastx.2	fused-ccdB [Escherichia coli]	emb|CAA71575.1|	92%	24	104
HODHE54	HODHE54R	1498	blastx.2	lysyl oxidase-like protein [Homo sapiens]	gb|AAA50162.1|	100% 96% 32%	24 323 94	323 418 348
HODHE88	HODHE88R	1499	blastx.2	(AK001737) unnamed protein product [Homo sapiens]	dbj|BAA91871.1|	83%	29	196
HODHG56	HODHG56R	1500	blastx.2	(AF151888) CGI-130 protein [Homo sapiens]	gb|AAD34125.1|AF151888_1	100%	121	231
HODHK86	HODHK86R	1503	blastx.2	(AB005299) BAI 3 [Homo sapiens]	dbj|BAA25363.1|	93% 88% 48%	2 413 207	289 568 590
HODJL36	HODJL36R	1505	blastx.2	(AL031177)	emb|CAA20118.1|	40%	254	436

	A			dJ889N15.2.2 (26S Proteasome subunit p28 (Ankyrin 1		32%	26	118
HODJZ09	HODJZ09R	1506	blastx.2	prepronociceptin [Homo sapiens]	emb|CAA66039.1|	98%	64	558
HODKB82	HODKB82 R	1508	blastx.2	serine/threonine kinase [Rattus norvegicus]	emb|CAB06294.1|	96% 28%	3 348	338 473
HODKD64	HODKD64 R	1514	blastx.2	(AL096881) hypothetical protein [Homo sapiens]	emb|CAB51405.1|	66%	503	333
HODKK26	HODKK26 R	1519	blastx.2	calmodulin [Homo sapiens]	dbj|BAA08302.1|	99% 45% 34% 100% 75%	59 41 38 463 417	424 286 391 507 464
HODKK40	HODKK40 R	1520	blastx.2	ribosomal protein S6 [Homo sapiens]	gb|AAA60289.1|	99%	1	624
HODKK73	HODKK73 R	1521	blastx.2	acidic ribosomal phosphoprotein (P0) [Homo sapiens]	gb|AAA36470.1|	96% 71% 28%	3 331 416	344 651 682
HODKN65	HODKN65 R	1526	blastx.2	homologue to elongation factor 1-gamma from A.salina [Homo sapiens]	emb|CAA45089.1|	76%	5	538
HOECR39	HOECR39R	1527	blastx.2	(AF216306) DCRC-1 [Mus musculus]	gb|AAF32294.1|AF216306_1	58%	116	424
HOFAB77	HOFAB77R	1528	blastx.2	(AC007193) PPP5_HUMAN [Homo sapiens]	gb|AAD22669.1|AC007193_3	80% 47%	16 450	489 512

HOFMF79	HOFMF79RA	1530	blastx.2	cytochrome b [Canis familiaris]	gb|AAD04775.1|	80% 38%	4 305	339 430
HOFMJ88	HOFMJ88R	1531	blastx.2	receptor protein-tyrosine kinase [Homo sapiens]	gb|AAA61139.1|	76%	17	370
HOFMM84	HOFMM84R	1533	blastx.2	hydroxymethylglutaryl-CoA reductase (NADPH) (EC 1.1.1.34) - mouse (fragments)	pir|A43533|A43533	72% 85%	112 254	252 274
HOFMN93	HOFMN93R	1534	blastx.2	(AF133669) ARL-6 interacting protein-1 [Mus musculus]	gb|AAD33046.1|AF133669_1	61% 84%	36 214	299 327
HOFMP59	HOFMP59R	1535	blastx.2	mitochondrial acetoacetyl-CoA thiolase [Homo sapiens]	dbj|BAA01387.1|	77% 83%	1 369	360 422
HOFMT68	HOFMT68R	1536	blastx.2	RNAse L inhibitor [Mus musculus]	gb|AAC24730.1|	52% 40%	137 264	547 581
HOFMT69	HOFMT69R	1537	blastx.2	HETEROGENEOUS NUCLEAR RIBONUCLEOPROTEIN M (HNRNP M).	sp|P52272|ROM_HUMAN	80% 75% 39%	127 27 98	264 122 316
HOFMU92	HOFMU92R	1538	blastx.2	(AP000694) chromatin assembly factor 1, subunit B (p60) [Homo sapiens]	dbj|BAA89426.1|	63%	124	432
HOFNF63	HOFNF63R	1540	blastx.2	phopshomannomutase [Homo sapiens]	gb|AAC51368.1|	70%	26	478
HOFNF76	HOFNF76R	1541	blastx.2	(AB002806) OS-9	dbj|BAA24363.1|	94%	17	370

				isoform 2 is missing nt 1642-1806; OS-9 1				
HOFNG51	HOFNG51R	1542	blastx.2	(AB006679) ATP binding protein [Homo sapiens]	dbj|BAA21881.1|	79%	157	414
HOFNK44	HOFNK44R	1543	blastx.2	osteonectin precursor [Bos taurus]	gb|AAA30678.1|	96%	19	186
HOFNY53	HOFNY53R	1544	blastx.2	(AL034417) bK215D11.1 (RNA-binding protein regulatory subunit) [Homo sapiens]	emb|CAB52550.1|	91%	17	232
HOFOB65	HOFOB65R	1545	blastx.2	pyruvate dehydrogenase E1-alpha precursor [Homo sapiens]	gb|AAA60055.1|	74%	16	600
HOFOB79	HOFOB79RP00A	1546	blastx.2	KERATIN TYPE II CYTOSKELETAL 8 (FRAGMENT).	sp|Q29386|Q29386	84%	80	397
HOFOE22	HOFOE22R	1547	blastx.2	activin receptor type I [Bos taurus]	gb|AAB02696.1|	98%	22	345
HOFOF47	HOFOF47R	1548	blastx.2	(AF129075) T-COMPLEX PROTEIN 1, THETA SUBUNIT (TCP-1-THETA) [Homo sapiens]	gb|AAD17375.1|	98% 62% 100%	18 245 244	242 460 270
HOFOF56	HOFOF56R	1549	blastx.2	protein disulfide isomerase [Mus musculus]	gb|AAA39906.1|	85% 57% 64% 36%	115 109 35 204	219 219 115 350

HOGCF48	HOGCF48R	1553	blastx.2	hepatitis C-associated microtubular aggregate protein p44 [Homo sapiens]	dbj|BAA06043.1|	63% 96% 67% 75%	245 76 414 523	592 240 587 570
HOGCG83	HOGCG83R	1554	blastx.2	keratin [Homo sapiens]	emb|CAA31695.1|	79% 81% 59%	50 309 21	310 482 113
HOGCI28	HOGCI28R	1556	blastx.2	complement component C3 [Homo sapiens]	gb|AAA85332.1|	93% 83%	3 173	179 337
HOGCJ10	HOGCJ10R	1557	blastx.2	(AF032667) rexo70 [Rattus norvegicus]	gb|AAC01579.1|	94%	103	471
HOGCJ55	HOGCJ55R	1559	blastx.2	Grb14 [Homo sapiens]	gb|AAC15861.1|	95%	13	459
HOGCT44	HOGCT44R	1562	blastx.2	casein kinase I-alpha [Homo sapiens]	gb|AAC41760.1|	100%	31	183
HOGCV85	HOGCV85R	1563	blastx.2	heparin binding protein [Homo sapiens]	gb|AAA58636.1|	76% 73%	3 398	521 535
HOGCV93	HOGCV93R	1564	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	79%	43	504
HOGCY12	HOGCY12R	1565	blastx.2	elongation factor 1 alpha [Oryctolagus cuniculus]	gb|AAA18502.1|	97% 41%	8 302	340 547
HOGCY58	HOGCY58R	1566	blastx.2	lipocortin II [Homo sapiens]	dbj|BAA00013.1|	94% 70% 30%	3 332 150	329 517 326
HOGCY74	HOGCY74R	1567	blastx.2	extracellular matrix protein BM-40 (AA 1 -	emb|CAA68724.1|	100%	3	260

				303) [Homo sapiens]					
HOGDD29	HOGDD29R	1568	blastx.2	drebrin E2 [Homo sapiens]	gb|AAA16256.1|	88%	3	152	
HOGDG03	HOGDG03R	1570	blastx.2	1-caldesmon II [Homo sapiens]	dbj|BAA14419.1|	95% 87%	191 393	388 491	
HOGDI44	HOGDI44R	1572	blastx.2	neutrophil gelatinase associated lipocalin [Homo sapiens]	emb|CAA58127.1|	100%	55	192	
HOGDO25	HOGDO25R	1574	blastx.2	XIAP associated factor-1 (ZAP-1) [Homo sapiens]	emb|CAA68030.1|	100%	2	163	
HOGDO58	HOGDO58R	1575	blastx.2	acidic ribosomal phosphoprotein (P0) [Homo sapiens]	gb|AAA36470.1|	65%	86	373	
HOGDP10	HOGDP10R	1576	blastx.2	keratin [Homo sapiens]	emb|CAA73943.1|	89%	3	287	
HOGDQ95	HOGDQ95R	1578	blastx.2	FUSE binding protein 3 [Homo sapiens]	gb|AAC50893.1|	90% 32% 62% 48%	70 157 390 413	435 378 461 493	
HOGDR70	HOGDR70R	1579	blastx.2	gamma subunit of CCT chaperonin [Homo sapiens]	emb|CAA52808.1|	83%	102	578	
HOGDV93	HOGDV93R	1580	blastx.2	glyceraldehyde 3-phosphate dehydrogenase (EC 1.2.1.12) [Homo sapiens]	gb|AAA52496.1|	98%	4	414	
HOGEA27	HOGEA27	1581	blastx.2	cytokeratin 8 [Homo	gb|AAA35763.1|	81%	2	160	

	R			sapiens]				
HOGED85	HOGED85 R	1582	blastx.2	AP-3 complex beta3A subunit [Homo sapiens]	gb|AAD03778.1|	75% 85% 25%	3 305 6	482 445 173
HOGEK25	HOGEK25 R	1583	blastx.2	HLA-Aw34.2 antigen [Homo sapiens]	emb|CAA43874.1|	91%	38	316
HOGEN30	HOGEN30 R	1584	blastx.2	regulatory subunit RI alpha [Homo sapiens]	emb|CAA01027.1|	83%	140	322
HOGEP69	HOGEP69R	1587	blastx.2	(AF056182) G-protein beta subunit [Emericella nidulans]	gb|AAC33436.1|	75% 78%	83 219	205 260
HOGET60	HOGET60R	1588	blastx.2	Plakoglobin [Homo sapiens]	gb|AAA64895.1|	67%	155	367
HOGEW58	HOGEW58 R	1590	blastx.2	focal adhesion kinase [Homo sapiens]	gb|AAA35819.1|	96%	4	414
HOGEZ03	HOGEZ03R	1592	blastx.2	kinase [Homo sapiens]	emb|CAA65450.1|	87% 83%	52 18	144 53
HOOHL68	HOOHL68 R	1601	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	92%	373	543
HOOHP84	HOOHP84 R	1602	blastx.2	(AF013215) ribosomal protein S2 [Bos taurus]	gb|AAB65437.1|	82%	1	156
HOOHQ09	HOOHQ09 R	1603	blastx.2	pfxblue fusion protein [synthetic construct]	gb|AAA72865.1|	63%	292	423
HOOHQ83	HOOHQ83 R	1604	blastx.2	(AB000910) ribosomal protein [Sus scrofa]	dbj|BAA19210.1|	100%	85	399
HOOHR81	HOOHR81 R	1605	blastx.2	pfxblue fusion protein [synthetic construct]	gb|AAA72865.1|	73% 78%	336 464	458 505
HOOHT13	HOOHT13	1608	blastx.2	steroid receptor TR2-11	gb|AAA36761.1|	95%	3	188

	R			[Homo sapiens]		95%	193	264
HOOIA46	HOOIA46R	1610	blastx.2	cpn10 protein [Bos taurus]	emb|CAA49288.1|	100%	3	239
HOOIB54	HOOIB54R	1613	blastx.2	ribosomal protein L23a [Homo sapiens]	gb|AAB17510.1|	75%	89	199
HOOIG71	HOOIG71R	1615	blastx.2	ribosomal protein L27 [Homo sapiens]	gb|AAA19815.1|	98%	2	250
HOOJN84	HOOJN84R	1624	blastx.2	IEF 7442 [Homo sapiens]	emb|CAA51360.1|	100%	4	189
HOOJT32	HOOJT32R	1629	blastx.2	ribosomal protein L23a [Homo sapiens]	gb|AAA03341.1|	76%	34	237
HOOJT65	HOOJT65R	1630	blastx.2	(AJ388520) Ribosomal protein [Canis familiaris]	emb|CAB46822.1|	88%	43	123
HOOJY44	HOOJY44R	1636	blastx.2	human homologue of rat phosphatidylethanolamine binding protein [Homo sapiens]	dbj|BAA03684.1|	100%	2	184
HOOJY80	HOOJY80R	1637	blastx.2	cytochrome b5 [Homo sapiens]	gb|AAA35729.1|	98%	61	462
HOOJY92	HOOJY92R	1638	blastx.2	mitochondrial matrix protein [Homo sapiens]	gb|AAA60127.1|	98% 91% 66% 62%	48 403 513 341	344 513 686 445
HOOKN43	HOOKN43R	1640	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	63%	124	399
HOPJF95	HOPJF95R	1643	blastx.2	nucleolar protein p40	gb|AAB46731.1|	91%	209	511

				[Homo sapiens]		90%	130	219
HOPJG60	HOPJG60R	1644	blastx.2	(AF161386) HSPC268 [Homo sapiens]	gb|AAF28946.1|AF161386_1	85% 100%	237 86	461 280
HOPJG79	HOPJG79R	1646	blastx.2	prosomal P27K protein [Homo sapiens]	emb|CAA42052.1|	97% 57%	3 535	551 594
HOPJH65	HOPJH65R	1650	blastx.2	C gamma 3 [Homo sapiens]	emb|CAA27268.1|	46% 44% 34% 100%	42 182 172 2	476 460 543 49
HOPKA06	HOPKA06R	1656	blastx.2	homeotic protein HOX4E - human	pir|A42008|A42008	95%	2	655
HOPKG16	HOPKG16R	1659	blastx.2	scar protein [Homo sapiens]	gb|AAA36597.1|	98%	1	432
HOPKG47	HOPKG47R	1660	blastx.2	(AL050318) dJ977B1.5 (myosin regulatory light chain 2, smooth muscle isoform) [Homo sapiens]	emb|CAB75369.1|	98% 83%	46 525	519 560
HOPKG83	HOPKG83R	1661	blastx.2	elongation factor-1-beta [Homo sapiens]	emb|CAA43019.1|	99% 50% 84%	34 584 615	594 709 653
HOPKK38	HOPKK38R	1662	blastx.2	(AF077539) contains similarity to human melanoma antigen p15 (GB: U19796) [Caenorhabditis elegans]	gb|AAC26291.1|	34% 61%	60 379	380 417
HOPKN14	HOPKN14R	1663	blastx.2	aldolase A (EC 4.1.3.13) [Homo sapiens]	gb|AAA51690.1|	100%	2	460

HOPKN67	HOPKN67R	1664	blastx.2	17,000 dalton myosin light chain [Bos taurus]	emb|CAA38722.1|	94%	31	483
HOPKO04	HOPKO04RA	1665	blastx.2	(AL137423) hypothetical protein [Homo sapiens]	emb|CAB70733.1|	96%	1	81
HOPKO61	HOPKO61R	1666	blastx.2	Six5 [Mus musculus]	dbj|BAA11824.1|	76%	4	405
HOPKP45	HOPKP45R	1667	blastx.2	PAX8=paired-box-protein [alternatively spliced] [human, 1	gb|AAB34216.1|	90% 90% 41% 35%	285 154 494 385	527 285 601 435
HOPKQ20	HOPKQ20R	1668	blastx.2	ribosomal protein S20 [Homo sapiens]	gb|AAA60286.1|	82%	115	435
HOPKQ82	HOPKQ82R	1669	blastx.2	(AF063243) ribosomal protein L30 [Bos taurus]	gb|AAC16388.1|	89%	28	498
HOPKR56	HOPKR56R	1670	blastx.2	unnamed protein product [Homo sapiens]	emb|CAA02873.1|	100%	6	173
HOPKU33	HOPKU33R	1671	blastx.2	ribosomal protein L11 [Homo sapiens]	gb|AAC15856.1|	86%	5	514
HOVBK49	HOVBK49R	1674	blastx.2	(AL080125) hypothetical protein [Homo sapiens]	emb|CAB45723.1|	85% 80% 75% 70% 79% 60% 73% 66% 63%	12 21 21 21 21 21 21 21 21	155 155 155 170 152 203 155 155 152

						61%	12	152
						63%	21	152
						40%	112	369
						40%	121	375
						38%	121	375
						38%	121	372
						36%	121	375
						46%	24	170
						34%	121	375
						34%	121	375
						32%	121	375
						38%	27	173
						42%	258	407
						34%	178	369
						36%	258	407
						37%	264	407
						34%	261	407
						39%	264	407
						34%	258	407
						32%	258	407
						31%	261	401
						30%	258	407
						36%	27	152
						52%	243	305
						28%	42	146
HOVBS15	HOVBS15R	1675	blastx.2	(AF105715) ubiquitous nuclear protein [Gallus gallus]	gb|AAD46422.1|AF105715_1	50%	246	434
						55%	50	109
						34%	112	249
HOVBX41	HOVBX41R	1676	blastx.2	(AF025331) receptor for activated protein	gb|AAB81618.1|	86%	182	319
						75%	340	399

				kinase C [Oreochromis niloticus]		72%	309	341
HOVCN03	HOVCN03R	1678	blastx.2	(AJ005798) thyroid hormone receptor alpha 2 [Sus scrofa]	emb|CAA06702.1|	66%	23	214
HOVCU89	HOVCU89R	1680	blastx.2	ribosomal protein L18a - rat	pir|S03957|R5RT18	72%	36	578
HOVCV33	HOVCV33R	1681	blastx.2	alpha-smooth muscle actin [Oryctolagus cuniculus]	emb|CAA43139.1|	92% 50%	1 287	321 454
HOVCW45	HOVCW45R	1682	blastx.2	(AL137585) hypothetical protein [Homo sapiens]	emb|CAB70827.1|	97% 100% 80% 21% 23%	2 372 463 5 35	220 464 522 196 190
HOVCZ45	HOVCZ45R	1684	blastx.2	retrovirus-related pol polyprotein pseudogene - human 1	pir|A44282|A44282	65% 61%	2 444	361 506
HOVDB61	HOVDB61R	1686	blastx.2	(AF067728) transactivating protein BRIDGE [Rattus norvegicus]	gb|AAD32925.1|AF067728_1	89%	91	204
HOVDB65	HOVDB65R	1688	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	96%	112	282
HOVDG71	HOVDG71R	1692	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	75% 81% 27%	116 3 103	226 98 210
HOVDH09	HOVDH09R	1693	blastx.2	binding protein [Homo sapiens]	gb|AAA36032.1|	98% 81%	15 405	299 485

HOVDH75	HOVDH75R	1694	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	81% 44%	316 299	381 433
HOVDV70	HOVDV70R	1696	blastx.2	(AF151866) CGI-108 protein [Homo sapiens]	gb|AAD34103.1|AF151866_1	69%	126	254
HOVEF34	HOVEF34R	1703	blastx.2	MTHSP75 [Homo sapiens]	gb|AAA67526.1|	71% 90%	246 580	611 612
HOVEF81	HOVEF81R	1704	blastx.2	thyroid receptor interactor [Homo sapiens]	gb|AAA73877.1|	99%	49	393
HOVEL51	HOVEL51R	1707	blastx.2	cytochrome c-1 [Homo sapiens]	gb|AAA52135.1|	71% 77%	96 21	209 47
HOVEY58	HOVEY58R	1712	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	93%	277	369
HOVJJ09	HOVJJ09R	1717	blastx.2	Lutheran blood group glycoprotein [Homo sapiens]	emb|CAA58449.1|	100%	28	576
HOVJR56	HOVJR56R	1718	blastx.2	macrophage migration inhibitory factor [Homo sapiens]	gb|AAA21814.1|	100%	4	186
HOVJU75	HOVJU75R	1719	blastx.2	laminin-binding protein [Homo sapiens]	gb|AAA36161.1|	92%	64	648
HOVJW17	HOVJW17R	1720	blastx.2	HLA-DR-beta-A [Homo sapiens]	emb|CAA00596.1|	92%	95	217
HOVJY68	HOVJY68R	1721	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	94% 97%	217 15	570 221

						35%	149	241
HOVKE66	HOVKE66 R	1723	blastx.2	unnamed protein product [unidentified]	emb|CAB69339.1|	98%	2	487
HOVKG18	HOVKG18 R	1725	blastx.2	PBG-D (aa 1-344) [Homo sapiens]	emb|CAA27801.1|	98%	2	379
HPAMB11	HPAMB11 R	1726	blastx.2	transformation-related protein [Homo sapiens]	gb|AAA36776.1|	66%	353	601
HPAMB60	HPAMB60 R	1727	blastx.2	poly(A)-binding protein [Homo sapiens]	gb|AAD08718.1|	80% 41% 31% 38%	2 65 65 496	679 556 553 684
HPAMB93	HPAMB93 R	1729	blastx.2	heat-shock protein [Canis familiaris]	gb|AAA87172.1|	74% 95%	17 231	253 299
HPAMC04	HPAMC04 R	1730	blastx.2	ADP-ribosylation factor [Homo sapiens]	gb|AAA57126.1|	50%	140	331
HPAMC19	HPAMC19 R	1731	blastx.2	Nascent polypeptide associated complex alpha subunit [Homo sapiens]	emb|CAA56869.1|	94%	89	676
HPAMC27	HPAMC27 R	1732	blastx.2	protein synthesis initiation factor 4A [Mus musculus]	emb|CAA40268.1|	88% 50%	64 746	786 805
HPAMC90	HPAMC90 R	1733	blastx.2	HBp15/L22 [Sus scrofa]	dbj|BAA04547.1|	97%	84	464
HPAMD56	HPAMD56 R	1734	blastx.2	isolog of yeast sui1 and rice gos2; putative [Homo sapiens]	gb|AAA60602.1|	99%	136	456
HPAME35	HPAME35 R	1735	blastx.2	amphiglycan [Homo sapiens]	emb|CAA47406.1|	80%	26	451

HPAMF16	HPAMF16R	1737	blastx.2	actin [Dictyostelium discoideum]	gb|AAA74186.1|	45% 73% 42%	178 452 619	414 520 732
HPAMF38	HPAMF38R	1738	blastx.2	(AF132970) CGI-36 protein [Homo sapiens]	gb|AAD27745.1|AF132970_1	76%	63	434
HPAMG44	HPAMG44R	1739	blastx.2	(AC004393) Similar to ribosomal protein L17 gb|X62724 from 1 1	gb|AAC18792.1|	61% 59%	331 117	612 374
HPAMG54	HPAMG54R	1740	blastx.2	(AF039752) histone deacetylase-2; HD-2 [Gallus gallus]	gb|AAB96924.1|	94% 95% 77% 68%	75 394 518 627	389 516 661 701
HPAMI11	HPAMI11R	1741	blastx.2	ribosomal protein S8 [Homo sapiens]	emb|CAA47670.1|	87%	11	592
HPAMJ71	HPAMJ71R	1742	blastx.2	ribosomal protein S7 [Homo sapiens]	emb|CAA81022.1|	97% 64% 63%	62 412 405	397 609 494
HPAMQ76	HPAMQ76R	1744	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	100%	2	190
HPAMT47	HPAMT47R	1745	blastx.2	(AF017153) putative RNA helicase and RNA dependent ATPase [Mus musculus]	gb|AAC36129.1|	100%	381	509
HPAMU33	HPAMU33R	1746	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	98% 80%	2 472	493 600
HPAMW44	HPAMW44R	1748	blastx.2	(AC006127) BRG-1-HUMAN [AA 812-1440]; nuclear protein GRB1; 1 1 SNF2L4	gb|AAC97986.1|	69% 91% 42%	4 221 46	354 358 159

				[Homo sapiens]				
HPAMY45	HPAMY45R	1749	blastx.2	(AC004908) similar to ribosomal protein L23a; similar to P29316 (PID:g132848) [Homo sapiens]	gb|AAD05196.1|	95% 92%	294 220	563 297
HPAMZ14	HPAMZ14R	1750	blastx.2	triosephosphate isomerase [Rattus norvegicus]	gb|AAA42278.1|	93% 61%	20 508	508 600
HPAMZ15	HPAMZ15R	1751	blastx.2	(AJ006776) IF2 protein [Homo sapiens]	emb|CAB44357.1|	95%	3	149
HPAMZ81	HPAMZ81R	1752	blastx.2	SP-40,40 prepropetide (AA -22 to 427) [Homo sapiens]	emb|CAA32847.1|	99% 62%	3 581	599 676
HPANA05	HPANA05R	1753	blastx.2	cell surface glycoprotein [Homo sapiens]	gb|AAA36033.1|	99% 61% 88%	107 466 579	487 729 605
HPANA07	HPANA07R	1754	blastx.2	nucleolin [Homo sapiens]	gb|AAA59954.1|	92% 34% 58%	7 19 626	678 678 697
HPANA28	HPANA28R	1755	blastx.2	cell surface glycoprotein [Homo sapiens]	gb|AAA36033.1|	100%	2	376
HPANB32	HPANB32R	1757	blastx.2	(AF078820) high mobility group protein [Spalax ehrenbergi]	gb|AAC27653.2|	93%	5	235
HPANE49	HPANE49R	1759	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	99%	8	412
HPANE52	HPANE52R	1760	blastx.2	23 kD highly basic	emb|CAA40254.1|	95%	13	624

				protein [Homo sapiens]					
HPANE87	HPANE87R	1761	blastx.2	lactate dehydrogenase B [Homo sapiens]	emb|CAA32033.1|	82% 48%	119 34	592 174
HPANJ67	HPANJ67R	1762	blastx.2	lipocortin II [Homo sapiens]	dbj|BAA00013.1|	100%	3	119
HPCOJ59	HPCOJ59R	1766	blastx.2	predicted using Genefinder; Similarity to Drosophila RNA 1 this gene [Caenorhabditis elegans]	emb|CAB01127.1|	32%	60	260
HPCOL81	HPCOL81R	1770	blastx.2	histone H2A.Z (AA 1-127) [Bos taurus]	emb|CAA36554.1|	100%	36	179
HPCOO90	HPCOO90R	1771	blastx.2	ribosomal protein L37a [Homo sapiens]	gb|AAA60280.1|	98%	60	335
HPCOO95	HPCOO95R	1772	blastx.2	HYPOTHETICAL PROTEIN (FRAGMENT).	sp|Q16465|YZA1_HUMAN	100%	337	2
HPCOP23	HPCOP23R	1773	blastx.2	ribosomal protein [Homo sapiens]	gb|AAA16105.1|	88%	53	427
HPCOR52	HPCOR52R	1778	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	94%	136	306
HPCOV35	HPCOV35R	1780	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	94%	244	414
HPCOV41	HPCOV41R	1781	blastx.2	Csa-19 [Homo sapiens]	gb|AAA86463.1|	94%	54	356
HPCPD26	HPCPD26R	1784	blastx.2	alpha subunit (aa 1-394) [Bos taurus]	emb|CAA27137.1|	97%	3	314

HPCPH52	HPCPH52R	1788	blastx.2	antizyme inhibitor [Homo sapiens]	dbj|BAA23593.1|	100%	3	101
HPCPU27	HPCPU27R	1790	blastx.2	enhancer factor I chain A-D - rat	pir|JC2022|JC2022	61%	3	185
HPCQT88	HPCQT88R	1797	blastx.2	integrin associated protein [Homo sapiens]	emb|CAA80977.1|	93% 90%	1 422	327 451
HPCQX47	HPCQX47R	1800	blastx.2	ribosomal protein L7a large subunit [Homo sapiens]	gb|AAA60282.1|	97% 92%	222 2	326 40
HPCTD21	HPCTD21R	1802	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	96%	336	506
HPCTD23	HPCTD23R	1803	blastx.2	putative progesterone binding protein [Homo sapiens]	emb|CAA73248.1|	98%	2	190
HPCTD25	HPCTD25R	1804	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	96%	374	544
HPCTF29	HPCTF29R	1806	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	96%	209	379
HPCTF83	HPCTF83R	1807	blastx.2	major histocompatibility complex class II antigen beta chain, 1 Partial Mutant, 57 aa] [Homo sapiens]	gb|AAB28826.1|	92%	58	177
HPCTI86	HPCTI86R	1809	blastx.2	H+-ATP synthase subunit b [Homo sapiens]	emb|CAA42782.1|	99%	1	306

HPCTO69	HPCTO69R	1811	blastx.2	(AF042857) lung cancer antigen NY-LU-12 variant A [Homo sapiens]	gb|AAC05826.1|	99%	77	538
HPCTV40	HPCTV40R	1815	blastx.2	ribosomal protein L35a (aa 1-110) [Rattus norvegicus]	emb|CAA27193.1|	99%	48	377
HPCTV53	HPCTV53R	1816	blastx.2	8.2 kDa differentiation factor [Homo sapiens]	emb|CAA56100.1|	85% 91% 100%	26 138 250	148 248 318
HPCTV92	HPCTV92R	1817	blastx.2	(AL117452) hypothetical protein [Homo sapiens]	emb|CAB55934.1|	85%	20	205
HPCTX22	HPCTX22R	1818	blastx.2	Aop1_Human, MER5(Aop1_Mouse)-like protein [Homo sapiens]	dbj|BAA08389.1|	100%	1	153
HPDOF81	HPDOF81R	1822	blastx.2	2,4-dienoyl-CoA reductase [Homo sapiens]	gb|AAA67551.1|	95% 64%	3 229	254 342
HPDOP05	HPDOP05R	1823	blastx.2	RNA polymerase II elongation factor-like protein [Homo sapiens]	emb|CAA87392.1|	100%	2	412
HPDOP20	HPDOP20R	1824	blastx.2	MHC HLA-DR-beta chain precursor old gene name 'HLA-DRA1' [Homo sapiens]	gb|AAA59831.1|	84%	45	542
HPDOS87	HPDOS87R	1825	blastx.2	40S ribosomal protein S14 [Podocoryne carnea]	emb|CAA50506.1|	95% 54% 91%	84 14 209	209 85 244

HPDOU54	HPDOU54R	1826	blastx.2	N-acetyl-beta-glucosaminidase prepro-polypeptide [Homo sapiens]	gb|AAA51828.1|	98% 89%	3 250	269 468
HPDOZ43	HPDOZ43R	1827	blastx.2	tripeptidyl peptidase II [Homo sapiens]	gb|AAA63263.1|	94%	64	489
HPDPC90	HPDPC90RA	1829	blastx.2	(AF073298) small EDRK-rich factor 2 [Homo sapiens]	gb|AAC63516.1|	98%	318	485
HPDPH14	HPDPH14R	1830	blastx.2	Q1Z 7F5 [Homo sapiens]	gb|AAA36021.1|	92% 87%	121 87	291 110
HPDPQ16	HPDPQ16R	1835	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	52%	349	519
HPDPR73	HPDPR73R	1836	blastx.2	(AJ010046) guanine nucleotide-exchange factor [Homo sapiens]	emb|CAA08974.1|	94%	131	460
HPDPS51	HPDPS51R	1837	blastx.2	(AF053356) ORF3, splicevariantc [Homo sapiens]	gb|AAC78797.1|	76%	2	214
HPDPS90	HPDPS90R	1838	blastx.2	(AB021643) gonadotropin inducible transcription repressor-3 [Homo sapiens]	dbj|BAA86989.1|	42% 36% 36% 32% 37% 48% 57% 60% 42%	128 125 125 155 292 325 325 325 325	337 319 319 319 399 402 387 384 402

						32%	390	518
						38%	325	402
						47%	399	461
						64%	396	437
HPDPX12	HPDPX12R P00B	1841	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	100%	14	418
HPDPY83	HPDPY83R P00B	1842	blastx.2	prothymosin alpha [Homo sapiens]	gb|AAA60213.1|	96%	199	393
						85%	199	387
HPDQC34	HPDQC34R	1843	blastx.2	(AF038129) polyubiquitin [Ovis aries]	gb|AAB92373.1|	95%	7	642
						94%	7	642
						97%	7	453
						94%	226	642
						64%	639	689
						61%	639	692
						61%	639	692
HPDQH11	HPDQH11 R	1845	blastx.2	ribosomal protein L37a [Homo sapiens]	gb|AAA60280.1|	100%	68	334
HPDQH34	HPDQH34 R	1846	blastx.2	(AF115850) PAR protein [Homo sapiens]	gb|AAD09822.1|	73%	3	371
						94%	345	494
						85%	226	267
						41%	178	240
HPDQI50	HPDQI50R	1847	blastx.2	succinate dehydrogenase flavoprotein subunit [Homo sapiens]	gb|AAA20683.1|	99%	18	539
HPDQI55	HPDQI55R	1848	blastx.2	(AL022577) dJ353H6.2.2 (SW1/SNF related, matrix associated, 1 (SNF2L1))	emb|CAA18608.1|	96%	1	441

HPDQR20	HPDQR20R	1851	blastx.2	RNA polymerase II 140 kDa subunit [Homo sapiens]	emb|CAA45124.1|	91% 60%	10 555	639 761
HPDQR88	HPDQR88R	1852	blastx.2	similar to putative ATP-dependent RNA helicase K03H1.2 of C.elegans(S41025) [Homo sapiens]	dbj|BAA13213.1|	90% 80%	2 555	550 584
HPDQS25	HPDQS25R	1854	blastx.2	Cctg [Xenopus laevis]	emb|CAA59350.1|	85% 72%	4 258	264 410
HPDQT32	HPDQT32R	1858	blastx.2	neuroleukin [Homo sapiens]	gb|AAA36368.1|	100%	3	410
HPDQU81	HPDQU81R	1859	blastx.2	(AF068227) putative transmembrane protein [Homo sapiens]	gb|AAC27614.1|	98%	3	269
HPDQV07	HPDQV07R	1860	blastx.2	ribosomal protein S7 [Homo sapiens]	emb|CAA81022.1|	71%	35	574
HPDQW39	HPDQW39R	1862	blastx.2	(AF133093) ARD-1 N-acetyltransferase homologue [Mus musculus]	gb|AAF22155.1|AF133093_10	100% 70%	113 466	466 705
HPDQX13	HPDQX13R	1863	blastx.2	Histone H3 [Asparagus officinalis]	emb|CAA57811.1|	72%	119	337
HPDQY23	HPDQY23R	1864	blastx.2	DNA binding protein [Homo sapiens]	emb|CAB10847.1|	97%	3	443
HPDQZ65	HPDQZ65R	1869	blastx.2	(AF199488) beta-actin [Coturnix coturnix	gb|AAF13710.1|AF199488_1	100% 63%	3 446	443 694

HPDRA44	HPDRA44R	1870	blastx.2	interferon regulatory factor 7 [Mus musculus]	gb|AAB18626.1|	72% 45%	4 362	240 559
HPDRA50	HPDRA50R	1871	blastx.2	actin [Diadromus pulchellus]	emb|CAA62806.1|	75%	16	189
HPDRF65	HPDRF65R	1872	blastx.2	ribosomal protein L8 [Homo sapiens]	emb|CAA82248.1|	58% 95% 50%	281 21 505	748 236 753
HPDRG73	HPDRG73R	1874	blastx.2	Ran [Canis familiaris]	emb|CAA77980.1|	94% 84%	50 451	460 528
HPDRM93	HPDRM93R	1876	blastx.2	ribosomal protein L37 [Homo sapiens]	dbj|BAA04888.1|	86%	12	302
HPDRO04	HPDRO04R	1877	blastx.2	ribosomal protein L37 [Homo sapiens]	dbj|BAA04888.1|	100%	17	307
HPDRP36	HPDRP36R	1879	blastx.2	GLI-Krupple related protein [Homo sapiens]	gb|AAA59467.1|	100% 37% 78%	30 36 304	317 260 372
HPDRP41	HPDRP41R	1880	blastx.2	UHX1 protein [Homo sapiens]	gb|AAC50450.1|	88%	2	739
HPDRQ66	HPDRQ66R	1881	blastx.2	ribosomal protein [Homo sapiens]	emb|CAA81488.1|	91%	81	290
HPDRQ84	HPDRQ84R	1882	blastx.2	Nascent polypeptide associated complex alpha subunit [Homo sapiens]	emb|CAA56869.1|	79%	4	555
HPDRR71	HPDRR71R	1883	blastx.2	(AF081484) alpha-tubulin isoform 1 [Homo sapiens]	gb|AAC31959.1|	98% 100%	16 381	390 422

HPDRS46	HPDRS46R	1885	blastx.2	(AF195094) gamma actin-like protein [Mus musculus]	gb|AAF08293.1|AF195094_1	98% 69%	15 301	299 369
HPDRS87	HPDRS87R	1886	blastx.2	peptidylprolyl isomerase [Homo sapiens]	emb|CAA37039.1|	100%	14	508
HPDRT37	HPDRT37R	1888	blastx.2	leukocyte antigen F [Homo sapiens]	emb|CAA34947.1|	60%	3	560
HPDRU03	HPDRU03R	1890	blastx.2	(AL021366) cICK0721Q.4.1 (PHD finger protein 2) (isoform 2) [Homo sapiens]	emb|CAA16159.1|	98% 90%	59 247	244 276
HPDRU37	HPDRU37R	1891	blastx.2	HLA-A9HH antigen [Homo sapiens]	dbj|BAA11936.1|	96%	1	231
HPDRV73	HPDRV73R	1893	blastx.2	vimentin [Homo sapiens]	gb|AAA61279.1|	90%	4	573
HPDRW09	HPDRW09R	1895	blastx.2	MHC HLA-DR2(non-Dw2/non-Dw12)a glycoprotein beta-chain [Homo sapiens]	gb|AAA36278.1|	95%	1	222
HPDRY37	HPDRY37R	1897	blastx.2	type XVI collagen alpha 1 chain, alpha 1 (XVI) [human, 1	gb|AAB25797.1|	64% 88% 50% 50% 48% 48% 52% 50% 44%	2 310 310 307 310 310 307 310 286	598 516 522 516 522 522 489 486 522

498	310	46%							
492	280	45%							
504	295	42%							
498	310	46%							
522	310	46%							
516	295	42%							
492	310	53%							
507	310	44%							
522	310	45%							
522	310	48%							
489	280	44%							
522	310	46%							
489	295	47%							
450	310	59%							
522	310	46%							
307	2	31%							
477	310	47%							
498	310	43%							
492	280	40%							
510	304	47%							
304	14	37%							
507	310	48%							
498	289	44%							
522	310	40%							
456	280	43%							
498	310	46%							
492	295	42%							
486	316	46%							
88	2	65%							
88	2	62%							

453	310	43%				
498	307	41%				
88	5	64%				
88	2	58%				
486	307	41%				
88	2	62%				
489	319	43%				
304	212	61%				
486	310	40%				
91	2	54%				
304	197	44%				
492	370	42%				
520	212	30%				
520	212	31%				
88	2	58%				
88	2	58%				
310	206	48%				
88	2	58%				
91	5	55%				
492	373	43%				
316	212	45%				
88	2	55%				
91	2	56%				
486	310	38%				
492	310	32%				
304	209	50%				
319	188	38%				
88	5	57%				
88	2	54%				
88	5	57%				

						57%	5	88
						58%	5	88
						55%	2	88
						55%	5	91
						51%	5	88
						55%	209	295
						48%	188	286
						53%	2	88
						51%	2	88
						54%	212	304
						48%	212	304
						55%	2	88
						55%	2	88
						55%	5	91
						50%	2	91
						46%	209	304
						41%	188	304
						45%	194	319
						48%	5	91
						42%	185	310
						51%	2	82
						45%	2	91
						47%	2	100
						41%	194	304
						51%	5	91
						46%	209	304
						40%	200	319
						36%	179	310
						55%	2	88
						47%	403	522

304	209	46%						
304	197	44%						
88	5	53%						
88	5	50%						
88	2	51%						
310	200	41%						
88	5	53%						
91	2	44%						
91	5	53%						
304	212	45%						
307	209	48%						
91	5	54%						
304	212	48%						
307	209	45%						
88	5	53%						
310	212	45%						
319	212	42%						
91	2	51%						
304	209	43%						
310	212	45%						
313	206	47%						
304	206	46%						
304	188	40%						
88	2	48%						
88	5	53%						
88	5	53%						
88	2	48%						
91	2	46%						
88	5	50%						
304	185	42%						

319	200	41%				
88	5	46%				
88	2	48%				
304	221	46%				
304	212	45%				
88	5	50%				
91	2	48%				
88	2	48%				
88	2	48%				
304	212	47%				
88	5	53%				
307	209	42%				
94	5	44%				
304	188	46%				
319	212	41%				
304	188	37%				
88	2	58%				
88	2	48%				
88	5	50%				
88	2	51%				
79	5	52%				
88	5	50%				
91	5	44%				
88	2	51%				
91	2	50%				
88	2	46%				
304	215	46%				
316	212	45%				
316	221	40%				
88	5	50%				

							41%	212	304
							41%	212	304
							40%	209	304
							48%	2	88
							44%	5	91
							50%	5	88
							44%	2	88
							48%	2	88
							51%	5	88
							48%	2	91
							48%	2	88
							45%	209	307
							43%	209	304
							45%	206	304
							41%	209	310
							41%	200	307
							54%	5	76
							52%	14	79
							48%	2	88
							50%	5	88
							50%	5	88
							41%	212	304
							42%	203	304
							38%	212	319
							50%	5	88
							45%	5	97
							45%	209	304
							38%	188	304
							36%	188	310
							52%	23	91

88	2	48%					
88	2	48%					
304	212	48%					
304	212	41%					
304	188	38%					
88	14	52%					
88	2	44%					
88	5	51%					
304	188	41%					
304	209	40%					
307	212	40%					
307	212	40%					
310	236	48%					
304	212	41%					
304	209	40%					
304	185	37%					
304	185	35%					
88	23	53%					
88	5	46%					
88	23	54%					
283	203	50%					
88	2	44%					
304	212	41%					
304	209	43%					
88	32	61%					
88	23	51%					
79	5	50%					
91	5	41%					
304	197	40%					
67	2	50%					

91	5	36%					
283	188	38%					
88	2	45%					
73	5	45%					
310	212	38%					
366	310	47%					
274	209	45%					
292	212	37%					
304	212	45%					
304	212	41%					
595	488	41%					
509	432	38%					
67	2	44%					
256	200	50%					
67	2	45%					
88	5	37%					
506	456	52%					
64	2	47%					
532	485	50%					
497	399	35%					
520	488	72%					
532	488	53%					
532	488	53%					
494	429	45%					
532	491	57%					
562	488	40%					
522	451	41%					
271	188	39%					
520	488	54%					
520	488	63%					

HPDRZ11					40%	488		553
	HPDRZ11R	1898	blastx.2	(AF012086) Ran binding protein 2 [Homo sapiens]	98%	67	351	
					63%	488		520
					48%	34	339	
					50%	488		535
					60%	347	640	
					44%	491		544
					50%	486	746	
					42%	476		532
					46%	637	717	
					37%	432		509
					40%	282		1
					31%	321		49
					32%	584		273
					40%	503		279
					36%	521		303
					42%	521		303
					60%	81		22
					53%	81		4
					53%	81		4
					44%	81		1
					55%	78		1
					50%	78		1
					56%	75		1
					48%	81		1
					53%	78		1
					52%	75		1
					48%	75		1
					42%	81		4
					44%	534		481

HPDRZ29	HPDRZ29R	1899	blastx.2	Lsc homologue [Homo sapiens]	emb|CAA70356.1|	60% 35%	3 106	650 651
HPDVA01	HPDVA01R	1900	blastx.2	(AF153685) truncated calcium binding protein [Homo sapiens]	gb|AAD51611.1|AF153685_1	81%	720	484
HPDVA06	HPDVA06R	1901	blastx.2	proteasome subunit HsN3 [Homo sapiens]	dbj|BAA05647.1|	87% 66%	243 525	359 641
HPDVB70	HPDVB70R	1903	blastx.2	Ig mu chain C region, membrane-bound splice form - human	pir|S16510|MHHUM	93% 26%	92 11	820 706
HPDVC28	HPDVC28R	1904	blastx.2	retrovirus-related pol polyprotein pseudogene - human 1	pir|A44282|A44282	84%	62	436
HPDVG06	HPDVG06R	1906	blastx.2	immunoglobulin M heavy chain [Homo sapiens]	emb|CAA47708.1|	99%	3	326
HPDVI25	HPDVI25R	1908	blastx.2	APEX nuclease [Homo sapiens]	dbj|BAA02633.1|	83% 50%	94 334	417 633
HPDVI95	HPDVI95R	1909	blastx.2	(AF067370) cytoplasmic dynein light chain; Tctex-1 [Bos taurus]	gb|AAC39268.1|	100%	3	338
HPDVK79	HPDVK79R	1911	blastx.2	TRANSCRIPTION FACTOR BTF3 (RNA POLYMERASE B TRANSCRIPTION 1	sp|Q64152|BTF3_MOUSE	77%	61	570
HPDVK93	HPDVK93R	1912	blastx.2	ribosomal protein L18a - rat	pir|S03957|R5RT18	89%	116	634

HPDVL45	HPDVL45R	1914	blastx.2	cell cycle checkpoint control protein [Homo sapiens]	gb|AAB39928.1|	100%	4	303
HPDVL52	HPDVL52R	1915	blastx.2	hNop56 [Homo sapiens]	emb|CAA72789.1|	98%	96	293
						56%	269	625
						60%	418	660
						29%	409	561
						27%	418	546
						31%	326	439
						29%	418	570
						28%	460	630
HPDVM61	HPDVM61 R	1916	blastx.2	(AF123880) gag polyprotein [multiple sclerosis associated retrovirus element]	gb|AAD48374.1|	44%	5	268
HPDVM63	HPDVM63 R	1917	blastx.2	(AF019036) human IgG1 neutralizing heavy chain with leader 1	gb|AAF21613.1|	97%	1	573
HPDVM86	HPDVM86 R	1918	blastx.2	gamma-interferon-inducible protein precursor [Homo sapiens]	gb|AAA36105.1|	91%	35	406
						100%	4	51
HPDVO67	HPDVO67 R	1919	blastx.2	(AC005954) ZO-3 [Homo sapiens]	gb|AAC72274.1|	96%	1	189
						84%	188	394
						67%	396	521
						41%	334	549
HPDVT37	HPDVT37R	1923	blastx.2	JUN-D protein [Mus musculus]	gb|AAA39345.1|	54%	16	231
						78%	240	281
HPDVU28	HPDVU28	1924	blastx.2	protein phosphatase 2C	emb|CAA74245.1|	96%	163	693

	R			gamma [Homo sapiens]				
HPDVU72	HPDVU72 R	1925	blastx.2	similar to the Drosophila splicing regulator, 1 [Homo sapiens]	gb|AAA19604.1|	100% 37%	3 51	497 434
HPDVU88	HPDVU88 R	1926	blastx.2	glutathione peroxidase [Homo sapiens]	gb|AAA67540.1|	91% 72%	51 595	599 648
HPDVV78	HPDVV78 R	1927	blastx.2	keratin 18 [Homo sapiens]	gb|AAA59461.1|	66% 85%	129 2	638 124
HPDWA88	HPDWA88 R	1929	blastx.2	calcium binding protein [Homo sapiens]	dbj|BAA23325.1|	94%	168	473
HPDWC30	HPDWC30 R	1931	blastx.2	GlcNac-1-P transferase [Homo sapiens]	emb|CAB04787.1|	85%	285	404
HPDWD67	HPDWD67 R	1934	blastx.2	open reading frame (458 AA) [Homo sapiens]	emb|CAA36054.1|	79%	319	14
HPDWD69	HPDWD69 R	1935	blastx.2	ribosomal protein S26 [Homo sapiens]	gb|AAC26987.1|	100%	9	353
HPDWD81	HPDWD81 R	1936	blastx.2	HLA-DRB4*0103 [Homo sapiens]	emb|CAB06483.1|	99% 63% 75% 44%	4 333 479 460	330 593 526 513
HPDWE11	HPDWE11 R	1937	blastx.2	polyadenylate binding protein [Homo sapiens]	gb|AAB97309.1|	82%	2	121
HPDWF93	HPDWF93 R	1939	blastx.2	Nascent polypeptide associated complex alpha subunit [Homo sapiens]	emb|CAA56869.1|	91%	16	483
HPDWL56	HPDWL56	1941	blastx.2	complement factor B	gb|AAA16820.1|	96%	83	379

	R			[Homo sapiens]		89%	660	770
						38%	83	145
HPDWN46	HPDWN46 R	1943	blastx.2	p67 myc protein [Homo sapiens]	dbj|BAA01374.2|	100%	4	468
						66%	468	566
HPDWN65	HPDWN65 R	1944	blastx.2	ribosomal protein S6 [Homo sapiens]	gb|AAA60287.1|	50%	94	468
HPDWN69	HPDWN69 R	1945	blastx.2	cell surface glycoprotein [Homo sapiens]	gb|AAA36033.1|	73%	77	379
						88%	3	95
HPDWO50	HPDWO50 R	1948	blastx.2	5S ribosomal protein [Mus musculus]	emb|CAA73041.1|	98%	54	377
						66%	379	528
						45%	416	535
HPDWO61	HPDWO61 R	1949	blastx.2	(AL049783) hypothetical protein [Homo sapiens]	emb|CAB42441.1|	97%	44	343
HPDWO82	HPDWO82 R	1950	blastx.2	cpn10 protein [Bos taurus]	emb|CAA49288.1|	100%	37	342
HPDWS61	HPDWS61 R	1951	blastx.2	unknown product specific to adipose tissue [Homo sapiens]	dbj|BAA08226.1|	97%	94	321
HPDWT55	HPDWT55 R	1952	blastx.2	alanine aminotransferase [Homo sapiens]	dbj|BAA01186.1|	100%	3	503
HPDWT56	HPDWT56 R	1953	blastx.2	(AF033095) testis enhanced gene transcript protein [Homo 1	gb|AAB87479.1|	89%	66	650
						100%	620	694
						83%	697	750
HPDWU47	HPDWU47 R	1954	blastx.2	90-kDa heat shock protein [Sus scrofa]	gb|AAC48718.1|	93%	58	678
						62%	662	757

HPDWU55	HPDWU55R	1955	blastx.2	protein disulfide isomerase-related protein (PDIR) [Homo sapiens]	dbj|BAA08451.1|	94% 37% 27%	1 1 1	726 624 636
HPDWU60	HPDWU60R	1956	blastx.2	(AF151063) HSPC229 [Homo sapiens]	gb|AAF36149.1|AF151063_1	93% 80%	176 598	565 657
HPDWU63	HPDWU63R	1957	blastx.2	cytokeratin 15 (AA 1 - 456) [Homo sapiens]	emb|CAA30535.1|	100%	2	370
HSCPJ17	HSCPJ17R	1962	blastx.2	(AL031670) dJ681N20.2 (similar to FTLL1(ferritin, light 1	emb|CAB43181.1|	97% 88%	260 405	403 485
HSDIA22	HSDIA22R	1963	blastx.2	ATPase 6 [Homo sapiens]	emb|CAA24031.1|	77% 87% 47%	123 2 238	308 121 306
HSDIX73	HSDIX73R	1965	blastx.2	NADH dehydrogenase subunit 4L [Homo sapiens]	dbj|BAA07296.1|	86% 100%	2 178	175 258
HSDZJ21	HSDZJ21R	1968	blastx.2	cytochrome-c oxidase (EC 1.9.3.1) chain I - western lowland 1	pir|C59153|C59153	82%	1	105
HSIFF84	HSIFF84R	1969	blastx.2	(AK002129) unnamed protein product [Homo sapiens]	dbj|BAA92096.1|	78%	143	6
HSKJR50	HSKJR50R	1970	blastx.2	translation initiation factor 3 47 kDa subunit [Homo sapiens]	gb|AAD03467.1|	86% 98% 50% 49% 45%	2 2 169 11 342	337 289 498 247 566
HSLHT27	HSLHT27R	1971	blastx.2	URF A6L (NADH dehydrogenase subunit)	emb|CAA24030.1|	80% 66%	2 2	139 121

HSODB16	HSODB16R	1972	blastx.2	cytochrome oxidase subunit II [Homo sapiens]	gb|AAA20843.1|	93%	1	651	
HSPSB24	HSPSB24R	1973	blastx.2	(AF076191) gamma-actin [Trichosurus vulpecula]	gb|AAC26520.1|	90%	61	732	
HSPSB70	HSPSB70R	1974	blastx.2	BBC1 [Homo sapiens]	emb|CAA45963.1|	100%	3	539	
HSPSB74	HSPSB74R	1975	blastx.2	WT1 [Xenopus laevis]	dbj|BAA11522.1|	98%	1	162	
HSPSB80	HSPSB80R	1976	blastx.2	unc-18homologue [Homo sapiens]	dbj|BAA19482.1|	92%	2	691	
HSPSC30	HSPSC30R	1977	blastx.2	cell surface glycoprotein [Homo sapiens]	gb|AAA36033.1|	91% 83% 100%	124 4 309	318 180 374	
HSPSE86	HSPSE86R	1978	blastx.2	(AF161507) HSPC158 [Homo sapiens]	gb|AAF29122.1|AF161507_1	91% 62% 54%	3 302 477	338 667 626	
HSPSG03	HSPSG03R	1979	blastx.2	protein phosphatase 2A 65 kDa regulatory subunit, alpha isoform [Sus scrofa]	emb|CAA84414.1|	100%	3	191	
HSPSG13	HSPSG13R	1980	blastx.2	protein p68 (AA 1-614) [Homo sapiens]	emb|CAA33751.1|	95% 76%	221 738	739 788	
HSPSG42	HSPSG42R	1981	blastx.2	(AF056490) cAMP-specific phosphodiesterase 8A [Homo sapiens]	gb|AAC39763.1|	98%	3	554	
HSPSG50	HSPSG50R	1982	blastx.2	(AB036829) skeletal muscle and kidney	dbj|BAA92340.1|	80%	132	578	

				enriched inositol phosphatase [Homo sapiens]				
HSPSG89	HSPSG89R	1983	blastx.2	(AF081484) alpha-tubulin isoform 1 [Homo sapiens]	gb|AAC31959.1|	97% 66%	106 629	645 700
HSPSH39	HSPSH39R	1984	blastx.2	(AB015610) ribosomal protein S4X [Chlorocebus aethiops]	dbj|BAA36501.1|	87%	68	772
HSPSH41	HSPSH41R	1985	blastx.2	SP-40,40 prepropetide (AA -22 to 427) [Homo sapiens]	emb|CAA32847.1|	94% 95% 69%	129 367 480	404 498 683
HSPSH49	HSPSH49R	1986	blastx.2	ribosomal protein S6 [Homo sapiens]	gb|AAA60289.1|	83%	96	821
HSPSI65	HSPSI65R	1987	blastx.2	ribosomal protein L5 [Homo sapiens]	gb|AAA85654.1|	89%	3	755
HSPSJ71	HSPSJ71R	1988	blastx.2	medium tumor antigen-associated 61-kD protein [Homo sapiens]	gb|AAA35531.1|	91% 54%	2 660	346 749
HSPSJ72	HSPSJ72R	1989	blastx.2	BST-2 [Homo sapiens]	dbj|BAA05679.1|	92% 98% 50%	97 410 561	432 592 632
HSPSQ22	HSPSQ22R	1990	blastx.2	UbcH5C [Homo sapiens]	gb|AAA91461.1|	100%	7	339
HSPSQ57	HSPSQ57R	1991	blastx.2	(AF044671) MM46 [Homo sapiens]	gb|AAD02337.1|	100%	16	327
HSPSY67	HSPSY67R	1992	blastx.2	MITOGEN-ACTIVATED PROTEIN KINASE 3	sp|P27361|MK03_HUMAN	99% 51% 47%	2 385 402	385 537 545

				(EC 2.7.1.-) 1 1 1				
HSPSZ69	HSPSZ69R	1993	blastx.2	unnamed protein product [unidentified]	emb|CAB69291.1|	98% 90%	2 285	283 317
HSPTA57	HSPTA57R	1994	blastx.2	scar protein [Homo sapiens]	gb|AAA36597.1|	64% 100%	337 318	735 338
HSPTN57	HSPTN57R	1995	blastx.2	(AB015610) ribosomal protein S4X [Chlorocebus aethiops]	dbj|BAA36501.1|	55% 37% 53%	2 178 356	157 360 400
HSSDM17	HSSDM17R	1996	blastx.2	(AL137714) hypothetical protein [Homo sapiens]	emb|CAB70887.1|	94%	55	210
HTLCU84	HTLCU84R	2001	blastx.2	RNA polymerase II elongation factor-like protein [Homo sapiens]	emb|CAA87392.1|	71%	185	541
HTSHG06	HTSHG06R	2002	blastx.2	URF 2 (NADH dehydrogenase subunit) [Homo sapiens]	emb|CAA24027.1|	87% 94%	107 1	364 105
HULAP70	HULAP70R	2005	blastx.2	cytochrome c oxidase subunit VIII precursor [Homo sapiens]	gb|AAA99313.1|	100%	251	349
HUSGA11	HUSGA11R	2006	blastx.2	carbonate dehydratase [Homo sapiens]	emb|CAA59331.1|	63% 100%	220 183	471 218
HUVFA39	HUVFA39R	2009	blastx.2	extensin [Volvox carteri]	emb|CAA46283.1|	34% 34%	460 436	92 8
HVCAA31	HVCAA31R	2010	blastx.2	myosin regulatory light chain [Homo sapiens]	gb|AAA67367.1|	98%	103	618
HVCAA37	HVCAA37R	2011	blastx.2	complement factor B [Homo sapiens]	gb|AAA16820.1|	96% 88%	322 3	687 137
HVCAA94	HVCAA94	2013	blastx.2	F-1-ATPase beta-	gb|AAA30395.1|	95%	1	435

	R			subunit precursor [Bos taurus]		50% 100%	440 489	643 512
HVCAB02	HVCAB02 R	2014	blastx.2	calcyphosine [Homo sapiens]	emb|CAA66609.1|	76% 67%	128 486	703 644
HVCAB03	HVCAB03 R	2015	blastx.2	40S ribosomal protein S12 [Sus scrofa]	emb|CAA55946.1|	92% 88%	386 133	664 288
HVCAB18	HVCAB18 R	2016	blastx.2	human homolog of DnaJ protein [Homo sapiens]	dbj|BAA02656.1|	89%	60	794
HVCAB52	HVCAB52 R	2018	blastx.2	'human homologue of rat ribosomal protein L9' [Homo sapiens]	dbj|BAA03401.1|	98%	67	612
HVCAB57	HVCAB57 R	2019	blastx.2	glyceraldehyde 3-phosphate dehydrogenase (EC 1.2.1.12) [Homo sapiens]	gb|AAA52496.1|	98% 70%	1 330	333 524
HVCAB88	HVCAB88 R	2020	blastx.2	(AL022721) dJ109F14.2 (60S Ribosomal Protein RPL10A) [Homo sapiens]	emb|CAB38627.1|	99%	89	739
HVCAC42	HVCAC42 R	2021	blastx.2	diphtheria toxin receptor associated protein [Chlorocebus aethiops]	dbj|BAA01569.1|	67% 86% 38%	184 119 305	414 184 430
HVCAD52	HVCAD52 R	2022	blastx.2	translin [Homo sapiens]	emb|CAA55341.1|	72%	19	291
HVCAE01	HVCAE01 R	2023	blastx.2	laminin-binding protein [Homo sapiens]	gb|AAA36161.1|	99% 47%	64 633	606 758

HVCAE15	HVCAE15R	2024	blastx.2	lymphocyte antigen [Homo sapiens]	gb|AAA59705.1|	91%	3	695
HVCAE22	HVCAE22R	2025	blastx.2	proteasome subunit C2 [Homo sapiens]	dbj|BAA00656.1|	97% 90%	86 489	487 554
HVCAE56	HVCAE56R	2026	blastx.2	complement component C3 [Homo sapiens]	gb|AAA85332.1|	74%	75	707
HVCAG56	HVCAG56R	2027	blastx.2	ribosomal protein L7 [Homo sapiens]	emb|CAA37139.1|	99%	3	551
HVCAH03	HVCAH03R	2029	blastx.2	(AF030249) putative dienoyl-CoA isomerase [Homo sapiens]	gb|AAB86485.1|	96% 62%	63 577	599 657
HVCAH17	HVCAH17R	2030	blastx.2	precursor [Homo sapiens]	emb|CAA68392.1|	90% 92%	1 299	294 340
HVCAH56	HVCAH56R	2031	blastx.2	ribosomal protein L3 [Homo sapiens]	emb|CAA51839.1|	97%	3	407
HVCAI08	HVCAI08R	2032	blastx.2	(AF008304) protein inhibitor of neuronal nitric oxide synthase [Oryctolagus cuniculus]	gb|AAC32530.1|	100%	130	375
HVCAI79	HVCAI79R	2034	blastx.2	sortilin [Homo sapiens]	emb|CAA66904.1|	80%	2	559
HVCAJ27	HVCAJ27R	2035	blastx.2	(AK000449) unnamed protein product [Homo sapiens]	dbj|BAA91172.1|	99%	88	537
HVCAJ81	HVCAJ81R	2036	blastx.2	(AB036060) ubiquitin [Oncorhynchus mykiss]	dbj|BAA88568.1|	100% 81%	97 404	405 469
HVCAJ95	HVCAJ95R	2037	blastx.2	(AF073298) small EDRK-rich factor 2	gb|AAC63516.1|	100%	34	210

				[Homo sapiens]				
HVCAK02	HVCAK02R	2038	blastx.2	hnRNP-E2 [Homo sapiens]	emb|CAA55015.1|	89% 90%	90 3	467 92
HVCAL06	HVCAL06R	2039	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	96% 30% 39%	3 302 432	308 559 554
HVCAO17	HVCAO17R	2040	blastx.2	Nm23 protein [Homo sapiens]	emb|CAA35621.1|	70%	4	531
HVCAO63	HVCAO63R	2041	blastx.2	similar to tubulin alpha-2 chain [Caenorhabditis elegans]	emb|CAA85463.1|	76% 72% 47%	82 269 342	276 322 410
HVCAP89	HVCAP89R	2042	blastx.2	CTP synthetase homolog [Mus musculus]	gb|AAB17729.1|	83% 67% 29% 80%	69 509 520 681	512 643 669 710
HVCAQ53	HVCAQ53R	2043	blastx.2	RPS16 [Homo sapiens]	gb|AAA60583.1|	100%	43	480
HVCAR87	HVCAR87R	2045	blastx.2	glyceraldehyde 3-phosphate dehydrogenase (EC 1.2.1.12) [Homo sapiens]	gb|AAA52496.1|	74%	54	536
HVCAS08	HVCAS08R	2046	blastx.2	triose-phosphate isomerase [Pan troglodytes]	gb|AAA35438.1|	74% 55%	77 609	796 803
HVCAS52	HVCAS52R	2047	blastx.2	proteasome subunit C8 [Homo sapiens]	dbj|BAA00659.1|	94%	1	579
HVCAU64	HVCAU64	2049	blastx.2	23 kD highly basic	emb|CAA40254.1|	97%	57	401

	R			protein [Homo sapiens]				
HVCBD18	HVCBD18R	2050	blastx.2	(AK000385) unnamed protein product [Homo sapiens]	dbj|BAA91131.1|	59% 76% 90%	396 215 139	196 153 107
HVCBE76	HVCBE76R	2051	blastx.2	ribosomal protein L27 [Homo sapiens]	gb|AAA19815.1|	80%	24	431
HVCBF38	HVCBF38R	2053	blastx.2	neurofibromatosis type 1 protein [Homo sapiens]	gb|AAA74897.1|	85% 41% 71% 42% 88%	6 274 483 517 452	236 636 524 594 478
HVCBF89	HVCBF89R	2054	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	78% 70% 50%	41 666 590	325 725 679
HVCBG01	HVCBG01R	2055	blastx.2	(AF184170) elongation factor 1-alpha [Sparus aurata]	gb|AAD56406.1|AF184170_1	96% 37% 47% 40%	43 300 353 553	237 572 535 627
HVCBQ31	HVCBQ31R	2056	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	90% 53% 45% 43%	65 327 328 482	343 647 663 559
HVCCA08	HVCCA08R	2057	blastx.2	neurofibromatosis type-1-GTPase activating-protein type III [Mus musculus]	dbj|BAA06395.1|	60%	23	256
HVCCK34	HVCCK34R	2058	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	99%	94	696
HVCCV93	HVCCV93R	2060	blastx.2	AICAR formyltransferase/IMP	gb|AAA97405.1|	92% 58%	206 454	454 648

				cyclohydrolase bifunctional enzyme [Homo sapiens]		59%	564	674
HVCDD19	HVCDD19R	2062	blastx.2	1-8U [Homo sapiens]	emb|CAA40626.1|	98%	61	459
HVCDF50	HVCDF50R	2063	blastx.2	similar to mouse Int-6 [Homo sapiens]	gb|AAB58251.1|	95% 63%	3 343	341 618
HVCDH77	HVCDH77R	2064	blastx.2	3-methyl-adenine DNA glycosylase [Homo sapiens]	emb|CAA93540.1|	98%	2	640
HVVAB37	HVVAB37R	2066	blastx.2	Ig mu chain C region - dog	pir|A93131|MHDG	39% 40% 39% 65% 38%	215 78 61 2 294	700 401 267 61 347
HVVAC18	HVVAC18R	2067	blastx.2	(AF035421) glyceraldehyde 3-phosphate dehydrogenase [Ovis 1	gb|AAB88484.1|	47%	59	379
HVVAE73	HVVAE73R	2069	blastx.2	(AJ001612) L-3-phosphoserine-phosphatase homologue [Homo sapiens]	emb|CAA04865.1|	91%	111	326
HVVAH91	HVVAH91R	2071	blastx.2	(AL050109) hypothetical protein [Homo sapiens]	emb|CAB43277.1|	87%	54	245
HVVAI03	HVVAI03R	2072	blastx.2	ribosomal protein L31 (AA 1-125) [Homo sapiens]	emb|CAA34066.1|	98% 88% 61%	32 303 7	304 383 45

HVVAJ23	HVVAJ23R	2073	blastx.2	immunoglobulin lambda-chain [Homo sapiens]	gb|AAA02915.1|	80%	9	563
HVVAK46	HVVAK46R	2077	blastx.2	v-fos transformation effector protein [Homo sapiens]	gb|AAA58487.1|	96% 61%	3 707	746 769
HVVAK85	HVVAK85R	2079	blastx.2	unnamed protein product [unidentified]	emb|CAA03726.1|	94%	14	370
HVVAL81	HVVAL81R	2080	blastx.2	phospholipase A2 [synthetic construct]	emb|CAA01645.1|	81%	157	471
HVVAS27	HVVAS27RP00B	2082	blastx.2	ribosomal protein S17 [Homo sapiens]	gb|AAA60284.1|	99%	9	413
HVVAW26	HVVAW26R	2083	blastx.2	23 kD highly basic protein [Homo sapiens]	emb|CAA40254.1|	74% 56% 78%	7 272 447	444 601 503
HVVBD91	HVVBD91RP00B	2084	blastx.2	gamma non-muscle actin [Oryctolagus cuniculus]	emb|CAA43140.1|	99%	2	436
HVVBF09	HVVBF09R	2085	blastx.2	(AK001810) unnamed protein product [Homo sapiens]	dbj|BAA91922.1|	89%	3	206
HVVBH88	HVVBH88R	2087	blastx.2	Na,K-ATPase alpha-subunit [Homo sapiens]	dbj|BAA00061.1|	74%	1	519
HVVBI16	HVVBI16R	2088	blastx.2	IgG [Homo sapiens]	gb|AAA02914.1|	69% 92%	32 577	562 618
HVVBJ08	HVVBJ08R	2089	blastx.2	(AB014876) robosomal protein L13 [Cricetulus griseus]	dbj|BAA34291.1|	81% 96% 52%	156 40 419	479 234 601
HVVBJ55	HVVBJ55R	2090	blastx.2	ribosomal protein S17	gb|AAA60284.1|	99%	9	413

	P00B			[Homo sapiens]				
HVVBK13	HVVBK13 R	2091	blastx.2	(AB022653) anti-Entamoeba histolytica immunoglobulin kappa 1	dbj|BAA82102.1|	88% 62% 43%	73 633 617	618 713 733
HVVBO65	HVVBO65 R	2092	blastx.2	immunoglobulin lambda light chain [Homo sapiens]	emb|CAA75033.1|	68%	12	623
HVVBO88	HVVBO88 R	2093	blastx.2	immunoglobulin heavy chain VH-III region [Homo sapiens]	gb|AAA98800.1|	82%	77	481
HVVBR70	HVVBR70 RP00B	2094	blastx.2	immunoglobulin lambda light chain [Homo sapiens]	emb|CAA40958.1|	68% 67%	20 318	334 491
HVVBT60	HVVBT60 R	2096	blastx.2	HYPOTHETICAL PROTEIN (FRAGMENT).	sp|Q16465|YZA1_HUMAN	100%	448	98
HVVCB04	HVVCB04 R	2098	blastx.2	heavy chain antibody 3D6 [synthetic construct]	emb|CAA01549.1|	69% 70% 30%	65 478 487	484 609 603
HVVCB08	HVVCB08 R	2099	blastx.2	(AB022653) anti-Entamoeba histolytica immunoglobulin kappa 1	dbj|BAA82102.1|	76%	73	735
HVVCC06	HVVCC06 R	2100	blastx.2	(AB005894) ecalectin [Homo sapiens]	dbj|BAA31542.1|	72% 85%	206 144	325 203
HVVCD81	HVVCD81 R	2102	blastx.2	glutathione S-transferase-pi [Homo sapiens]	gb|AAA56823.1|	96%	80	640

HVVCD90	HVVCD90R	2104	blastx.2	type II mesothelial keratin K7 [Homo sapiens]	gb|AAA36146.1|	82%	98	748
HVVCE65	HVVCE65R	2106	blastx.2	80K-H protein [Homo sapiens]	gb|AAA52493.1|	94%	2	214
HVVCF38	HVVCF38R	2107	blastx.2	immunoglobulin lambda light chain [Homo sapiens]	emb|CAA37883.1|	84%	114	467
HVVCG29	HVVCG29R	2108	blastx.2	FB19 protein [Homo sapiens]	emb|CAA73697.1|	95%	1	375
						65%	1	384
						66%	1	375
						65%	19	375
						69%	19	375
						63%	19	375
						52%	19	378
						63%	1	285
						47%	19	387
						44%	19	378
						44%	58	399
						70%	654	725
HVVCG31	HVVCG31R	2109	blastx.2	(AF061034) FIP2 [Homo sapiens]	gb|AAC16046.1|	91%	14	349
						98%	310	573
						60%	576	773
						25%	361	540
HVVCG46	HVVCG46R	2110	blastx.2	phosphoglycerate kinase (EC 2.7.2.3) [Homo sapiens]	gb|AAA60078.1|	100%	3	350
HVVCG93	HVVCG93R	2111	blastx.2	(AB021288) beta 2-microglobulin [Homo sapiens]	dbj|BAA35182.1|	100%	49	405

HVVCH28	HVVCH28R	2112	blastx.2	(AF104913) eukaryotic protein synthesis initiation factor [Homo sapiens]	gb|AAC82471.1|	100%	3	350
HVVCI28	HVVCI28R	2113	blastx.2	extracellular matrix protein BM-40 (AA 1 - 303) [Homo sapiens]	emb|CAA68724.1|	100%	3	119
HVVCI50	HVVCI50R	2114	blastx.2	3D6 antibody light chain [synthetic construct]	emb|CAA01550.1|	89% 79% 75%	44 382 644	403 663 739
HVVCI85	HVVCI85R	2115	blastx.2	Ig gamma chain C region - chimpanzee	pir|PT0207|PT0207	96% 80%	3 599	599 688
HVVCJ51	HVVCJ51R	2116	blastx.2	lysophosphatidic acid acyltransferase-beta [Homo sapiens]	gb|AAB58776.1|	94% 87%	1 273	261 371
HVVCK78	HVVCK78R	2118	blastx.2	Ig light chain Vl1 region [Homo sapiens]	gb|AAA20217.1|	85% 77% 84%	27 242 298	248 307 336
HVVCL52	HVVCL52R	2119	blastx.2	NuMA protein [Homo sapiens]	emb|CAA77670.1|	99%	1	339
HVVCL73	HVVCL73R	2120	blastx.2	ribosmal protein small subunit [Homo sapiens]	gb|AAA35682.1|	100% 91%	14 674	583 775
HVVCM67	HVVCM67R	2121	blastx.2	Immunoglobulin lambda chain [Homo sapiens]	gb|AAC37563.1|	95% 78%	3 283	284 378
HVVCM84	HVVCM84R	2122	blastx.2	apoferritin H chain [Homo sapiens]	emb|CAA25086.1|	68%	3	407
HVVCN20	HVVCN20R	2123	blastx.2	Hin-2 [Homo sapiens]	gb|AAA64187.1|	89% 71%	68 4	286 87

HVVCN54	HVVCN54R	2125	blastx.2	[Human Ig rearranged gamma chain mRNA, V-J-C region and complete cds.], gene product [Homo sapiens]	gb|AAA73002.1|	70% 78%	17 17	388 337
HVVCO13	HVVCO13R	2127	blastx.2	3D6 antibody light chain [synthetic construct]	emb|CAA01550.1|	79% 48%	8 549	550 695
HVVCO16	HVVCO16R	2128	blastx.2	alpha SNAP [Homo sapiens]	gb|AAC80170.1|	96%	251	346
HVVCO87	HVVCO87R	2129	blastx.2	(AF191829) heat-shock protein [Littorina plena]	gb|AAF12788.1|AF191829_1	90% 51% 93%	30 359 457	389 469 501
HVVCP41	HVVCP41R	2130	blastx.2	(AB019120) seven transmembrane receptor [Rattus norvegicus]	dbj|BAA82518.1|	52% 54%	2 573	436 644
HVVCP88	HVVCP88R	2131	blastx.2	(AC002528) alpha2(I) collagen [Homo sapiens]	gb|AAB69977.1|	88% 50% 49% 48% 47% 48% 49% 51% 48% 47% 47% 50%	15 3 3 3 6 3 3 3 3 15 15 15	470 302 299 299 299 290 272 272 299 299 299 272

						47%	3	272
						46%	3	302
						53%	3	278
						48%	15	272
						46%	3	272
						45%	18	302
						51%	3	272
						45%	18	314
						47%	3	272
						46%	3	305
						49%	3	299
						45%	3	299
						44%	3	299
						45%	3	302
						45%	3	302
						48%	3	272
						45%	3	299
						51%	27	272
						44%	3	302
						49%	3	272
						45%	18	272
						47%	3	272
						47%	15	278
						48%	3	272
						45%	3	299
						45%	18	299
						43%	18	299
						47%	3	272
						42%	3	302
						45%	3	299

					48%	18	272
					45%	15	299
					42%	6	272
					44%	3	272
					43%	18	299
					48%	3	272
					42%	3	302
					43%	3	299
					44%	15	272
					43%	3	272
					43%	3	299
					43%	3	272
					46%	18	272
					43%	3	299
					43%	3	299
					41%	3	302
					38%	319	480
					43%	583	696
HVVCQ49	HVVCQ49R	2133	blastx.2	(AF076191) gamma-actin [Trichosurus vulpecula]	gb|AAC26520.1|	76%	54	629
HVVCQ93	HVVCQ93R	2135	blastx.2	90kDa heat shock protein [Homo sapiens]	gb|AAA36025.1|	89%	7	699
HVVCS28	HVVCS28R	2136	blastx.2	Rab5c protein [Canis familiaris]	emb|CAA81626.1|	91%	183	293
						80%	403	507
HVVCS32	HVVCS32R	2137	blastx.2	(AF015283) selenoprotein W [Homo sapiens]	gb|AAB69859.1|	100%	95	217
HVVCU50	HVVCU50R	2141	blastx.2	ubiquitin-like protein [Homo sapiens]	dbj|BAA04889.1|	100%	65	307

HVVCV41	HVVCV41 R	2142	blastx.2	(AB010491) natriuretic peptide A type receptor [Homo sapiens]	dbj|BAA31199.1|	100% 100% 66% 40%	2 309 283 399	292 482 309 479
HVVCW75	HVVCW75 R	2144	blastx.2	(AK000419) unnamed protein product [Homo sapiens]	dbj|BAA91151.1|	100%	3	410
HVVCX46	HVVCX46 R	2146	blastx.2	p48 [Homo sapiens]	gb|AAB38382.1|	54% 50% 100% 51%	71 418 354 654	712 747 431 734
HVVCY29	HVVCY29 R	2147	blastx.2	immunoglobulin gamma-2 heavy chain [Homo sapiens]	emb|CAB58438.1|	97%	2	715
HVVCY55	HVVCY55 R	2148	blastx.2	Hrs [Homo sapiens]	dbj|BAA23366.1|	99%	2	511
HVVCY60	HVVCY60 R	2149	blastx.2	elongation factor-1 alpha-chain protein (EF-1-alpha) [Xenopus 1	gb|AAA49700.1|	86% 38% 42%	1 498 557	555 716 763
HVVCY62	HVVCY62 R	2150	blastx.2	(AF113887) kappa 1 immunoglobulin light chain [Homo sapiens]	gb|AAD29608.1|	90%	3	620
HVVCY75	HVVCY75 R	2151	blastx.2	ribosomal protein L34 [Rattus rattus]	emb|CAA32574.1|	96%	394	477
HVVCY77	HVVCY77 R	2152	blastx.2	phospholipid transfer protein [Homo sapiens]	gb|AAA36443.1|	98%	2	598
HVVCZ18	HVVCZ18 R	2153	blastx.2	UDP-GalNAc:polypeptide N-	emb|CAA63371.1|	95%	423	542

				acetylgalactosaminyltransferase (GalNAc-T3) [Homo sapiens]				
HVVDH44	HVVDH44R	2156	blastx.2	(AF013622) immunoglobulin heavy chain variable region [Homo 1	gb|AAC39746.1|	85%	20	562
HVVDM23	HVVDM23R	2157	blastx.2	(AJ010446) immunoglobulin kappa light chain [Homo sapiens]	emb|CAA09185.1|	80% 74% 62%	81 308 541	338 502 588
HVVDM31	HVVDM31R	2158	blastx.2	adenylyl cyclase-associated protein [Homo sapiens]	gb|AAA35507.1|	98%	3	446
HVVDM45	HVVDM45R	2159	blastx.2	(AF016365) hexokinase I [Homo sapiens]	gb|AAC15863.1|	96%	66	155
HVVDN29	HVVDN29R	2162	blastx.2	ADP,ATP carrier protein T2 - human	pir|S03894|S03894	95% 25% 56%	8 29 615	643 559 683
HVVDN77	HVVDN77R	2163	blastx.2	Lon protease-like protein [Homo sapiens]	emb|CAA53625.1|	97%	4	594
HVVDP70	HVVDP70R	2164	blastx.2	SM22 alpha [Homo sapiens]	dbj|BAA21839.1|	92% 39% 48%	61 294 287	309 593 415
HVVDQ46	HVVDQ46R	2165	blastx.2	destrin [Sus scrofa]	dbj|BAA14105.1|	64% 56%	106 285	513 485
HVVDQ49	HVVDQ49R	2166	blastx.2	calpain (EC 3.4.22.17) large chain 1 - rabbit (fragments)	pir|A24815|A24815	97%	2	103

HVVDS12	HVVDS12 R	2167	blastx.2	Ig kappa chain NIG2 precursor - human	pir|JE0244|JE0244	89%	91	726
HVVDS21	HVVDS21 R	2168	blastx.2	gamma subunit of CCT chaperonin [Homo sapiens]	emb|CAA52808.1|	95% 68%	74 690	727 746
HVVDS35	HVVDS35 R	2169	blastx.2	hevin [Homo sapiens]	emb|CAA57650.1|	88% 67%	80 636	736 803
HVVDT29	HVVDT29 R	2171	blastx.2	(AF065388) tetraspan NET-1 [Homo sapiens]	gb|AAC17119.1|	72%	121	612
HVVDT44	HVVDT44 R	2172	blastx.2	ch-TOG [Homo sapiens]	emb|CAA63212.1|	98%	2	460
HVVDW02	HVVDW02 R	2174	blastx.2	retinoic acid induced gene E [Homo sapiens]	emb|CAA92321.1|	79%	3	200
HVVDW61	HVVDW61 R	2175	blastx.2	chimeric monoklonal TSH antibody, gamma chain [synthetic construct]	emb|CAA00676.1|	86%	2	229
HVVDX90	HVVDX90 R	2177	blastx.2	(AF149822) mitotic checkpoint protein BUB3 [Mus musculus]	gb|AAD38038.1|AF149822_1	84%	23	511
HWLME48	HWLME48 R	2181	blastx.2	calpain II [Sus scrofa]	gb|AAB17381.1|	95%	3	140
HWMIB35	HWMIB35 R	2183	blastx.2	ZZ:beta-Gal' IgG-binding fusion protein [unidentified cloning 1	gb|AAB00807.1|	96%	49	219

HWWEF90	HWWEF90R	2185	blastx.2	(AL035461) dJ967N21.3 (novel protein similar to predicted 1	,emb|CAB55274.1|	95%	61	300

[0048] Table 2 further characterizes certain encoded polypeptides of the invention, by providing the results of comparisons to protein and protein family databases. The first column provides a unique clone identifier, "Clone ID NO:", corresponding to a cDNA clone disclosed in Table 1. The second column provides the unique contig indentifier, "Contig ID:" which allows correlation with the information in Table 1. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequences. The fourth column provides the analysis method by which the homology/identity disclosed in the row was determined. The fifth column provides a description of PFam/NR hits having significant matches identified by each analysis. Column six provides the accession number of the PFam/NR hit disclosed in the fifth column. Column seven, "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in column five. Comparisons were made between polypeptides encoded by polynucleotides of the invention and a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFam"), as described below.

[0049] The NR database, which comprises the NBRF PIR database, the NCBI GenPept database, and the SIB SwissProt and TrEMBL databases, was made non-redundant using the computer program nrdb2 (Warren Gish, Washington University in Saint Louis). Each of the polynucleotides shown in Table 1, column 3 (e.g., SEQ ID NO:X or the 'Query' sequence) was used to search against the NR database. The computer program BLASTX was used to compare a 6-frame translation of the Query sequence to the NR database (for information about the BLASTX algorithm please see Altshul et al., J. Mol. Biol. 215:403-410 (1990), and Gish et al., Nat. Genet. 3:266-272 (1993)). A description of the sequence that is most similar to the Query sequence (the highest scoring 'Subject') is shown in column five of Table 2 and the database accession number for that sequence is provided in column six. The highest scoring 'Subject' is reported in Table 2 if (a) the estimated probability that the match occurred by chance alone is less than 1.0e-07, and (b) the match was not to a known repetitive element. BLASTX returns alignments of short polypeptide segments of the Query and Subject sequences which share a high degree of similarity; these segments are known as High-Scoring Segment Pairs or HSPs. Table 2 reports the degree of similarity between the Query and the Subject for each HSP as a

percent identity in Column 7. The percent identity is determined by dividing the number of exact matches between the two aligned sequences in the HSP, dividing by the number of Query amino acids in the HSP and multiplying by 100. The polynucleotides of SEQ ID NO:X which encode the polypeptide sequence that generates an HSP are delineated by columns 8 and 9 of Table 2.

[0050] The PFam database, PFam version 5.2, (Sonnhammer et al., Nucl. Acids Res., 26:320-322, (1998)) consists of a series of multiple sequence alignments; one alignment for each protein family. Each multiple sequence alignment is converted into a probability model called a Hidden Markov Model, or HMM, that represents the position-specific variation among the sequences that make up the multiple sequence alignment (see, e.g., R. Durbin et al., *Biological sequence analysis: probabilistic models of proteins and nucleic acids*, Cambridge University Press, 1998 for the theory of HMMs). The program HMMER version 1.8 (Sean Eddy, Washington University in Saint Louis) was used to compare the predicted protein sequence for each Query sequence (SEQ ID NO:Y in Table 1) to each of the HMMs derived from PFam version 5.2. A HMM derived from PFam version 5.2 was said to be a significant match to a polypeptide of the invention if the score returned by HMMER 1.8 was greater than 0.8 times the HMMER 1.8 score obtained with the most distantly related known member of that protein family. The description of the PFam family which shares a significant match with a polypeptide of the invention is listed in column 5 of Table 2, and the database accession number of the PFam hit is provided in column 6. Column 7 provides the score returned by HMMER version 1.8 for the alignment. Columns 8 and 9 delineate the polynucleotides of SEQ ID NO:X which encode the polypeptide sequence which shows a significant match to a PFam protein family.

[0051] As mentioned, columns 8 and 9 in Table 2, "NT From" and "NT To", delineate the polynucleotides of "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFam/NR database as disclosed in the fifth column of Table 2. In one embodiment, the invention provides a protein comprising, or alternatively consisting of, a polypeptide encoded by the polynucleotides of SEQ ID NO:X delineated in columns 8 and 9 of Table 2. Also provided are polynucleotides encoding such proteins, and the complementary strand thereto.

[0052] The nucleotide sequence SEQ ID NO:X and the translated SEQ ID NO:Y are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, the nucleotide sequences of SEQ ID NO:X are useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in Clone ID NO:Z. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling immediate applications in chromosome mapping, linkage analysis, tissue identification and/or typing, and a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used to generate antibodies which bind specifically to these polypeptides, or fragments thereof, and/or to the polypeptides encoded by the cDNA clones identified in, for example, Table 1.

[0053] Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

[0054] Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and a predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing cDNA Clone ID NO:Z (deposited with the ATCC on June 5, 2000 and were given ATCC Deposit Nos. PTA-1982 and PTA-1985; and/or as set forth, for example, in Table 1, 6 and 7). The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. Further, techniques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X.niques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X.

[0055] The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

RACE Protocol For Recovery of Full-Length Genes

[0056] Partial cDNA clones can be made full-length by utilizing the rapid amplification of cDNA ends (RACE) procedure described in Frohman, M.A., et al., Proc. Nat'l. Acad. Sci. USA, 85:8998-9002 (1988). A cDNA clone missing either the 5' or 3' end can be reconstructed to include the absent base pairs extending to the translational start or stop codon, respectively. In some cases, cDNAs are missing the start codon of translation. The following briefly describes a modification of this original 5' RACE procedure. Poly A+ or total RNA is reverse transcribed with Superscript II (Gibco/BRL) and an antisense or complementary primer specific to the cDNA sequence. The primer is removed from the reaction with a Microcon Concentrator (Amicon). The first-strand cDNA is then tailed with dATP and terminal deoxynucleotide transferase (Gibco/BRL). Thus, an anchor sequence is produced which is needed for PCR amplification. The second strand is synthesized from the dA-tail in PCR buffer, Taq DNA polymerase (Perkin-Elmer Cetus), an oligo-dT primer containing three adjacent restriction sites (XhoI, SalI and ClaI) at the 5' end and a primer containing just these restriction sites. This double-stranded cDNA is PCR amplified for 40 cycles with the same primers as well as a nested cDNA-specific antisense primer. The PCR products are size-separated on an ethidium bromide-agarose gel and the region of gel containing cDNA products the predicted size of missing protein-coding DNA is removed. cDNA is purified from the -agarose with the Magic PCR Prep kit (Promega), restriction digested with XhoI or SalI, and ligated to a plasmid such as pBluescript SKII (Stratagene) at XhoI and EcoRV sites. This DNA is transformed into bacteria and the plasmid clones sequenced to identify the correct protein-coding inserts. Correct 5' ends are confirmed by comparing this sequence with the putatively identified homologue and overlap with the partial cDNA clone. Similar methods known in the art and/or commercial kits are used to amplify and recover 3' ends.

[0057] Several quality-controlled kits are commercially available for purchase. Similar reagents and methods to those above are supplied in kit form from Gibco/BRL for both 5' and 3' RACE for recovery of full length genes. A second kit is available from Clontech which is a modification of a related technique, SLIC (single-stranded ligation to single-stranded cDNA), developed by Dumas et al., Nucleic Acids Res., 19:5227-32 (1991). The major differences in procedure are that the RNA is alkaline hydrolyzed after - reverse transcription and RNA ligase is used to join a restriction site-containing anchor primer to the first-strand cDNA. This obviates the necessity for the dA-tailing reaction which results in a polyT stretch that is difficult to sequence past.

[0058] An alternative to generating 5' or 3' cDNA from RNA is to use cDNA library double-stranded DNA. An asymmetric PCR-amplified antisense cDNA strand is synthesized with an antisense cDNA-specific primer and a plasmid-anchored primer. These primers are removed and a symmetric PCR reaction is performed with a nested cDNA-specific antisense primer and the plasmid-anchored primer.

RNA Ligase Protocol For Generating The 5' or 3' End Sequences To Obtain Full Length Genes

[0059] Once a gene of interest is identified, several methods are available for the identification of the 5' or 3' portions of the gene which may not be present in the original cDNA plasmid. These methods include, but are not limited to, filter probing, clone enrichment using specific probes and protocols similar and identical to 5' and 3' RACE. While the full length gene may be present in the library and can be identified by probing, a useful method for generating the 5' or 3' end is to use the existing sequence information from the original cDNA to generate the missing information. A method similar to 5' RACE is available for generating the missing 5' end of a desired full-length gene. (This method was published by Fromont-Racine et al., Nucleic Acids Res., 21(7):1683-1684 (1993)). Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcript. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest, is used to PCR amplify the 5' portion of the desired full length gene which may then be sequenced and used to generate the full length gene. This

method starts with total RNA isolated from the desired source, poly A RNA may be used but is not a prerequisite for this procedure. The RNA preparation may then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase if used is then inactivated and the RNA is treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase. This modified RNA preparation can then be used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction can then be used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the ovarian antigen of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the relevant ovarian antigen.

[0060] The present invention also relates to vectors or plasmids, which include such DNA sequences, as well as the use of the DNA sequences. The material deposited with the ATCC (deposited with the ATCC on June 5, 2000 and were given ATCC Deposit Nos. PTA-1982 and PTA-1985; and/or as set forth, for example, in Table 1, 6 and 7) is a mixture of cDNA clones derived from a variety of human tissue and cloned in either a plasmid vector or a phage vector, as shown, for example, in Table 7. These deposits are referred to as "the deposits" herein. The tissues from which some of the clones were derived are listed in Table 7, and the vector in which the corresponding cDNA is contained is also indicated in Table 7. The deposited material includes cDNA clones corresponding to SEQ ID NO:X described, for example, in Table 1 (Clone ID NO:Z). A clone which is isolatable from the ATCC Deposits by use of a sequence listed as SEQ ID NO:X, may include the entire coding region of a human gene or in other cases such clone may include a substantial portion of the coding region of a human gene. Furthermore, although the sequence listing may in some instances list only a portion of the DNA sequence in a clone included in the ATCC Deposits, it is well within the ability of one skilled in the art to sequence the DNA included in a clone contained in the ATCC Deposits by use of a sequence (or portion thereof) described in, for example Tables 1A or

2 by procedures hereinafter further described, and others apparent to those skilled in the art.

[0061] Also provided in Table 7 is the name of the vector which contains the cDNA clone. Each vector is routinely used in the art. The following additional information is provided for convenience.

[0062] Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128,256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res. 16:*7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res. 17:*9494 (1989)) and pBK (Alting-Mees, M. A. et al., *Strategies 5:*58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene.

[0063] Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus 15:*59- (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).

[0064] The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the deposited clone (Clone ID NO:Z). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include preparing probes or primers from the disclosed

sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

[0065] Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of ovarian associated genes corresponding to SEQ ID NO:X or the complement thereof, polypeptides encoded by SEQ ID NO:X or the complement thereof, and/or the cDNA contained in Clone ID NO:Z, using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

[0066] The polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

[0067] The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below). It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

[0068] The polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified using techniques described herein or otherwise known in the art, such as, for example, by the one-step method described in Smith and Johnson, Gene 67:31-40 (1988). Polypeptides of the invention also can be purified from natural, synthetic or recombinant sources using techniques described herein or otherwise known in the art, such as, for

example, antibodies of the invention raised against the ovarian polypeptides of the present invention in methods which are well known in the art.

[0069] The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA sequence contained in Clone ID NO:Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X or a complement thereof, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of, the complement of the nucleic acid sequence of SEQ ID NO:X, a nucleic acid sequence encoding a polypeptide encoded by the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA contained in Clone ID NO:Z.

[0070] Many polynucleotide sequences, such as EST sequences, are publicly available and accessible through sequence databases and may have been publicly available prior to conception of the present invention. Preferably, such related polynucleotides are specifically excluded from the scope of the present invention. Accordingly, for each contig sequence (SEQ ID NO:X) listed in the third column of Table 1, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, b is an integer of 15 to the final nucleotide of SEQ ID NO:X, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. More specifically, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a and b are integers as defined in columns 4 and 5, respectively, of Table 3. In specific embodiments, the polynucleotides of the invention do not consist of at least one, two, three, four, five, ten, or more of the specific polynucleotide sequences referenced by the Genbank Accession No. as disclosed in column 6 of Table 3. In further embodiments, preferably excluded from the invention are the specific polynucleotide

sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or more of the available material having the accession numbers identified in the sixth column of this Table. In no way is this listing meant to encompass all of the sequences which may be excluded by the general formula, it is just a representative example. All references available through these accessions are hereby incorporated by reference in their entirety.

TABLE 3

Clone ID NO: Z	SEQ ID NO: X	Contig ID:	EST Disclaimer Range of a	Range of b	Accession #'s
HOVCD34	11	396327	1 - 314	15 - 328	BF032064, T40388, BG223493, AI917132, BF526832, AI554435, H86931, AC007262, AC026722, Z98742, AP000115, AL121969, AL159996, AP001717, AL353771, AL354674, AL353802, AL031846, AP000308, AL139343, Z97629, AC010135, AL049832, AP000048, AL020995, AC011292, AC007955, AL356103, AC004938, AC002492, AC068811, AC023511, AL008721, AC011749, AL024473, AC006354, AC002351, Z93015, AC007172, AC005230, AL139342, AF165926, AL121902, AC007025, AC005181, AL158841, AC011742, AL163201, AC009024, AC008269, AL139277, AC007964, AC007938, AF205588, AL139185, AC006478, AC007784, AL034395, AL136000, AC007344, AC010731, AL122013, AC002288, AL359751, AL121721, AC066590, AL139232, AC024164, AL031662, AC007358, AC009481, AL050335, AL033533, AC010789, AC009498, AC007850, AL020998, AC018684, AL034451, AL135783, AC008066, AC005030, AL049562, AL138706, Z95125, AC007461, AC011475, AL117337, AL117694, AL121915, AL049776, AL078596, AL035089, AL096764, AL049563, AC002553, AL035067, AC007458, AC018642, AC005550, Z99496, Z98036, Z99291, AC003119, AC007446, AC020751, AC068314, AC003035, X87344, AC066598, AC073175, AL139351, AC012156, AC006314, AC010582, AC018832, AC006142, AL139353, and AL163247.
HEBGD58	12	498281	1 - 340	15 - 354	BG253988, BF508504, AA187211, H44280, BG251021, AA431830, AW962811, AA355921, H06638, BG259131, AV729233, BG119160, BG027014, T48526, AW298232, and AL138828.
HETCD42	13	533532	1 - 2333	15 - 2347	AL079360, AU137870, AU139146, BG260515, AV714769, AU137391, BF984453, AV713475, AV757390, AU138193, BF981793, AV713896, BE886752, BE889586, AW863749, BE882133, BF984505, BF983192, BG033275, BE537808, AU138496, BF978549, BF791293, AV758458, BF978970, BE897839, BE891773, BG028552, AV756779, BF348380, BE544852, BG180994, AU138423, BE783926, BE790149, AV647651, BG180514, BE886542, BF669771, AW950287, BG030964, AU133929, BF540824, BF672669, AI308837, BE882889, BF244654, BF666694, AV647698, BG169993, BF790368, AV723145, AV732863, AA122236, AV647695, AV715522, AV685920, BF028308, AV647569, BF105115, BE892120, BF695056, BF669431, BF436129, BE543091, AW363937, BF667030, AI740603, BE568179, AV715544, AI698125, AI678683, BE748490, AW299845, BG009598, AI766040, BF036918, AA911996, BF790701, AI740699, BF129905, BF695828, BE748787, BF694681, BE049332, BE501459, BF791119, BF242503, BF240540, AI566017, BE739216, AI862778, BF103607, BF383055, BF089920, BF383113, BF574696, AW439230, BF028165, AI992130, BF029869, BF214255, AA083269, BF692328,

					BF028909, BF028950, N31326, BF670821, BF211706, BF701480, BF670811, BE866031, AI917193, AI570519, BE568353, AI095016, BF130290, BF245935, AA731991, BE789179, BE018220, BE789659, AV706901, BE873916, AI784504, AU157511, AU157154, AA807683, BF214737, BE866674, AA521441, BF697291, AI097040, AA159802, AU155086, BF576547, BF001380, AA577000, BF576765, AI421580, BE042461, AA315644, BF241476, BG165631, AI954071, AI949499, BF001429, BG178240, AI088027, BF693411, BE866506, BF243338, BF238642, BF213391, BF693271, AI590159, BE564554, AI870962, AA291279, BF696346, AI683299, AA452797, BF691651, BF697614, BF574483, AI335173, BF574392, AI922454, BE878946, AA613953, BE301705, W46431, AI983758, BE138832, BF381737, BE568565, BF126639, N21374, BF793733, AV757543, BE175751, BF211165, BF693918, BF383115, BF575927, AA083228, AA626504, BE568752, BF993159, BF248184, AI274752, AV647219, AW514125, AI580851, AI302371, AV758280, W52465, AW339075, AW627843, AW589504, AA729798, AA165015, AI301712, BF923406, BG025081, AI095888, BF132421, BE865839, H12391, AW193393, BG113656, AI750428, N35068, AW628469, BF381687, AA018858, AI537545, AI539228, AV647526, BE739676, BF244248, N43807, AI355889, BF219513, AW305167, AA248634, BF670216, BF208900, D58212, BF576833, BE567828, AV692522, AW316752, AV763220, AA249298, BF221484, BE247748, BF336472, BE567395, AV704009, BF336476, AC002543, U03851, U03269, U16741, M80589, and M25534.
HTXKC18	14	535854	1 - 864	15 - 878	AA547979, AI085242, BG029528, BF725761, BE162539, AI801505, AI358712, BF804385, AI369580, AL037714, AL079734, BE062478, AA483256, BF811714, BF681619, BF804359, BG180976, BE178231, AV760941, BE252421, AW021116, AI439372, AA594157, AV758870, AW819125, AL043351, BE062476, AA643770, AI583252, AI923052, BE178064, AI440117, AV760391, AL038606, AV741663, AA528503, AW855643, BE301584, AA528496, AW069227, AW969941, AW833865, AI380617, AA579419, AV760014, BF868994, AI612142, BF842771, AV760389, AI251576, AW023111, AL037683, AW827182, AL040038, AW237905, BE677029, AI491765, AL042373, AI499298, AI421755, AW020150, AI174876, AI821467, AA469327, AI612070, BF244530, AW855528, BE063437, AW779609, AI583466, AA812058, BF821009, AV763276, AV726091, BF821897, BG152386, AI611533, AI565084, AA832016, AA828047, AA857812, AI275982, AI610941, BE150580, AI299882, AV760915, AI301373, AA838091, AI457389, T74524, AL121655, AC005520, AC006312, AL356379, AC008569, AL024498, AC007546, AC020904, AC018758, AL158040, AC005911, AC024082, AL109804, AC007637, AC005940, AC004089, AP001435, AC011449, AL096840, AC005102, AC004867, AC021016, AL121586, AL034548, AC004967, AC005736, AC005480, AC008403, AC003684, AC009516, AC020916, U91321, AC005755, AL136137, AP000704, AL050318, AC005531, AF168787, AC002350, AC005387, AC005952, AC010271, AC007731, AC005412, AC020552, AC002312, AC008753, AL034379, AL121653, AC005197, AL157838, AC008551, AL138787, AC005971, AC004217, AC007597, AF045555, AC018720, AL355385, AC006597,

					AL138878, AC024075, Z93015, AC005071, AC011491, AC005015, AC005519, AC005500, AC021999, AC018755, AC008482, Z85996, AP001717, AC005684, AP000088, AC005225, AL022163, AL117258, AC004084, U80017, AL031659, AC011455, AF243527, AC004752, AC003109, AF053356, AC011514, AC005081, AL022323, AC020906, AC025430, AP000553, AP000558, AC004895, AP000503, AP001694, AP001725, AL035249, AC009123, AC000025, AC002316, AC004841, AC000353, AL161670, AC005274, AL136418, AL023807, AP001711, Y10196, AL162615, AL121658, L44140, AC005089, AC020663, AC004887, AC010618, AC002477, AC005082, U95740, AC005839, AL136295, AC011495, AC010458, AC008745, AC009032, AC005031, AP000501, AF109907, AC004878, AL157938, AL353748, AL109627, AP001726, AL137073, AL133355, AC020754, AC011450, AC006014, AL139353, AC005231, AL109935, AL121845, AF001549, AC006330, AC011484, AC002565, AL138706, AC009079, AC004475, AC006571, AC007384, AL031680, AC011497, AC005488, AC007308, AC004166, AF030453, AC007383, AL445248, AC004673, AL138976, AP000045, AD000092, AL079342, AC006483, AC002073, AC011489, AL109797, AL136304, AL023553, AC006344, AL121652, AC007739, AC010463, AC008055, AC007679, AL136300, AC005484, AP000692, AC007242, AC005098, AC010605, AL109930, AP000557, AC011480, AC005778, AL049840, AC009756, AL035681, AC005011, AC002400, AL135744, AC004019, AC005103, AC011442, AC008537, AC002476, AC002470, AC003101, AL121675, U62293, Z83844, AL138756, AC010553, AC005057, AC006064, AC008616, AL080243, AF001548, AL133353, AC006241, AP001630, AC008812, AC006057, AL078461, Z95115, AL117377, AL139289, AC004601, AX039602, AC005080, AC005837, AC007537, AC002425, Z83822, AC004150, AC004815, AL034417, AC006388, AC008474, AC005037, AC008395, AL132987, AL050335, AC005236, AC002492, AC004477, AL035072, AL135787, AP000113, AF047825, AL137222, AL031666, AL034420, U47924, AC004890, AC011895, AL133448, and AL008719.
HLDRK20	15	553765	1 - 1300	15 - 1314	AL531625, BE249834, BE249869, AU133584, AU133954, BE293561, AV692312, AW957051, BE293519, AU135103, AA399208, AW176043, AV690099, AI904273, T60502, BF374345, AV655442, AW804571, AW804603, T70509, AV688378, H47199, H93928, AV694565, AV694238, T68223, T68956, T68126, T68045, AA337893, T69698, AW804991, AW804996, T68924, AW372297, T72305, AV696946, AV696947, AI301941, AA344625, T71155, T72771, T56196, T73042, BF992875, AI133687, BE392020, AV693194, BF848482, AW104835, BF369544, T74806, AI363265, T68644, T60607, AA779168, T68483, T67851, AV647855, T73703, AI266591, AR034619, S67310, L15702, X72875, AX014918, AF019413, X00284, K01566, M15082, and M59240.
H2MBD33	16	558474	1 - 425	15 - 439	AW957931, AW957932, AA308306, AI633677, BE538201, BE044997, AW856247, BF061419, BE787771, AW874580, AA503529, AW117709, AI613324, AI561159, AI732205, AA133693, AA747898, AU160258, Z19706, AA405171, AU156212, BG231867, AI498698, AA579013, U88573, A75315, AC016816, X87344, AC000117, AC004506, AC004522, AC004899,

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HSYBX61	17	558708	1 - 1094	15 - 1108	AI950214, AI074445, BG114649, BF666951, AV705261, AI050761, BF215604, BF700368, AW665220, BF247160, BE958106, BF668544, AW901579, AA863199, BG105211, AW901581, AA933061, BF691307, BF081566, AU153641, W48793, BE701906, AW901558, BF363888, W49619, AA757163, AI127140, BF363884, BE812771, AW901562, AA406401, AU127328, AU120201, AW901572, BE701904, AV694302, AW901560, AW951188, BE938964, W24640, BE701884, AI207705, AW360819, AL041311, AW360785, T29223, AI765920, BF382797, AA747483, AW136630, N83358, R38385, AW900970, BF970590, BF885816, AW899304, N87392, AA693316, N89144, AI675151, AW900934, BF529885, BE767210, AI754509, BE464612, BG167754, M34064, X57548, X53615, S42303, AB017695, AB008811, M31131, AF097593, X07277, S45013, X54315, S45011, AF177682, Z27439, Z27440, and Z27441.
HELHC03	18 -	562745	1 - 1161	15 - 1175	BE262771, AI024014, H91016, H90904, AV695478, BE138594, AL036909, AI560085, AI537397, AI630283, AA744018, AV756491, AL038842, T74524, AW023302, AI888468, AI076236, AA181917, AA468022, AI678867, BE147833, AW965008, AC005048, AC005726, AC006050, AL139182, AL121893, AC005829, AL078591, U91323, Z84469, AL162615, AF196969, AC006337, AC011470, AL031777, AC005102, AL135901, Z93241, AC007934, AC005670, AC007263, AL353804, AC004895, AC004963, AL121891, AL050349, AC004906, AC000025, AC004983, AL117382, AC006011, AL034422, AP000563, AL354896, AL139099, AC008760, AB003151, AL157789, AC003070, AL049872, AC005412, AL162430, AC005859, AP000558, AP000065, AC011500, AL050332, AC011479, AC018738, AC005527, AL158141, AC009516, AP001711, AC005529, AL356354, AC007686, AC000379, AL109797, AL135744, AC002115, AC002546, AC005080, AC011455, AL008635, AL133417, Z95114, AC007785, AC004634, AP000501, AC007216, AC018751, AF053356, AC002312, Z97985, AC002550, AC005236, AL049795, AC010553, AL049780, AC005052, AL138807, AC005482, AF111168, AC005081, AC011442, AL445248, AC007055, AC036103, AC002425, AP000313, AL109743, AF088219, AC002091, AC010201, AC006552, AL133228, AC005840, AL137060, AC009399, AL050318, AC002301, AC007130, AL118520, AC006483, AP000133, AC010422, AL031575, AC011475, AC011523, AC007201, AC004916, AF109907, AF168787, AC006071, AL365212, AC004694, AC027319, AL133548, AC011495, Z94801, Z98884, AC002404, AC002395, AC008085, AP000194, AC004858, AL136298, AC018719, AL138893, AC011527, AC002369, AC011592, AL356750, AL389886, AC005409, AC008770, Z94056, AP000350, AL133153, AL132653, AC015651, AL031846, AL162424, AC083874, AC005755, AC004031, AC016831, AP001714, AC005015, AC007465, AP000555, AC008537, U91326, AC020947, AC020908,

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HOFMP70	19	585385	1 - 333	15 - 347		AU129119, AU132116, AU122873, BF985587, BE880467, AU134725, BF763276, AU127421, BF986272, BF752117, BF679945, AU131326, AU139214, AA314523, AA852641, AU129752, AA307371, BF696550, AU130590, AU118964, BG178180, AU131491, BF669193, AU136184, BF985661, BE410823, T68678, BF749656, AW239136, AA242999, BE620262, BF698331, AA375736, BE782468, BF965316, BF327652, BE876259, BE875957, BE796542, BE620043, BE389731, BE790649, T07406, BF570489, BE785080, BE745306, BF681401, AW579861, BF985601, AU128901, BE156508, AL036766, AU128389, AA375047, BF107335, BF985580, BG171811, T71831, BF985602, BF903411, T71811, AA362982, AV750113, AA092055, BE732006, BE731395, AU127766, BE156632, BE733317, BE273157, BF733809, AL044046, AW455795, BF107170, BF752590, AW363271, U01153, X15187, AK025459, X90848, Y09136, X76301, S74939, M26596, M33716, and AR032000.
HSKNZ25	20	585675	1 - 674	15 - 688		AI423388, AA705880, BF525904, AA349525, AA488891, AA836122, BF348027, AA465431, AI310146, AI302088, AA584447, AW968376, N46920, AI986100, BF753058, BE160619, AI077517, AL040766, AA890243, BE244498, AA325569, BE160856, AA771925, AA489237, AA126066, AV656598, AW372110, AW137313, AL039325, BF959941, AA046254, AW136539, BE072182, AA465360, AA917759, AW962078, AW816387, BE935535, AA573136, AW517075, BF903430, R45086, AW797195, AI368519, AA078308, AI022603, AI354688, BF761820, AI565643, AA810621, W87764, AW852367, BE149694, AV653343, BG010915, BF989770, BF762909, BF834278, BF897554, BF929290, AW861486, AI052645, AA280250, BF857730, BF857711, AW857610, AW857593, BE729724, AL118895, AW857604, AW938518, BE142184, BG105313, AA077547, AA577804, AA496279, BE089188, BE142866, BE142936, BE161095, AW888812, AW857605, AW945790, BF750582, BF813834, AI651771, BE089952, AW898784, AW845700, BE393138, AW902136, AW845696, BF953515, AL024458, AC005562, AC007204, AL031228, AL035246, AC012309, AC010632, AC003975, AC011460, AC007275, AC008821, AL445249, D28126, AC009489, AL122001, AC003682, AL121905, AC008537, AL136317, AL139277, AL022318, AC078899, AC002301, AL360088, AP000346, AC022137, AL033526, AC068948, AL133162, AL121985, AC006504, AC019173, AL132656, AC000397, Z95704, AC010328, AC008176, AC073898, AL161802, AL121932, AC006462, AL365505, AL031775, AP000431, AP001675, AC022148, AC008969, AC074331, AL035458, AL078614, AP001464, AC004976, AL109943, AC022596, AP000498, AL163202, AB026898, AL137070, AC008554, AL136419, AC010889, AC002049,

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HDPFK39	21	588869	1 - 736	15 - 750	BF892783, BF894772, BE243071, BF892143, BF892796, BF892140, BF899235, M18044, J03925, J04145, AF268593, S52159, S52157, S52153, S52154, S52152, S52161, I19138, M76724, S52155, M82856, and U59801.
HL1AB07	22	638220	1 - 870	15 - 884	AW410018, AI956068, AI140111, BE902158, BE410544, BE559955, AW009487, AW006443, BF237868, AV714206, AI301924, AI494409, AV717288, BG256432, BF976795, BG166509, AW080966, BE619019, W52136, AV709106, BE619682, AI189286, BE566002, AW084868, AI687212, AV711092, BF697110, BE567660, BE409695, AV710866, AI801202, AI032877, AW410017, BE568300, AI262521, BE963864, AI523891, AI184261, AV691952, BE091071, AV746007, AI566878, AA151257, AI144492, AA826477, AW083498, BE787965, BF851971, BE535774, AW410030, AI399980, N36966, BF435067, AI809283, AI018420, BF967855, AI819520, W30822, AI128356, AI025970, BE672642, BF081971, BF081981, AI880707, AA127920, AW779049, BF676071, AI206487, AW471111, AW028734, AV762883, AI150971, BF881900, AA889268, AA887476, BF858077, N36122, AI190417, AI127953, BF696643, AA843205, N38925, AI566572, AI066676, BE931182, AI990970, BE879114, BF028182, W37751, AA730086, H48432, C18042, AA142846, AI139565, AI688339, AA679046, AA588794, AA127971, AV716260, AA001534, AA719696, AI074105, AA642642, N42965, AV762116, AI375763, N47999, W67531, AV723563, AI627627, AA494298, AA973740,

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HHGAS83	23	654868	1 - 833	15 - 847	AL533363, AW156912, AI816293, BG178409, AL533268, BE780411, AW157766, AI798138, AI963352, AI928783, AW262125, BE791202, AV759165, AI674833, AI039883, AW162562, BG178768, BE877936, AV722302, BF571229, BF339857, AI830091, BF126571, BF674685, AI986467, AW148939, BF345205, AV711322, BG236045, AW272546, BE872856, AV723940, BG163828, BF967950, BE745145, AA572799, BE899054, BE615020, AW161689, BF529506, AI206529, W93860, AL533542, BE799051, BG232073, AI200704, BF973309, BF679748, BF974878, AI199823, AI817392, BF184997, BF967861, AV710824, BF338381, N25541, AA669821, AV702224, BF528571, BF530905, AA593762, AW157587, AW157474, AA128267, BF974287, AV711487, AW029137, AA577607, AV707789, AA864492, AV733623, AI077676, AA576598, AA575898, AA708990, AA843178, AI338574, BF239951, BF820971, AI832599, AI139644, BE273067, AI745646, AI340072, BF210950, BE165278, BF206608, BE614815, BE165293, BE165267, BF700461, BF821744, AI276918, BE165274, BE165284, BE874868, AI630859, BE165285, BE165295, BE165281, BE165287, BE165289, BE165094, BE165276, BE165272, BE165273, BE165275, BE165110, BE165296, BE165286, BE165277, BE165157, BE165165, BE165084, BE165294, BE165290, BE165087, BE165271, BE165077, BE165089, AV734637, BF351286, BE165095, BF772629, BE165270, BF339501, BE165078, BE844143, BE165088, BE165099, AA814150, BE122846, BF967319, BE810478, BF342269, AW386221, BE165090, BE279632, BE165085, BF351288, BE165116, BE165091, BE165098, AI139451, AI673724, N34138, BE165092, AA970318, AA506290, W67498,

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HTSGU37	24	704405	1 - 502	15 - 516	AW163711, AI815378, AL524692, AA813566, AF019406, AL050341, and M95610.
H2LAN34	25	705692	1 - 530	15 - 544	AA314140, AI623759, AW954842, AV747509, AA768701, AW005593, AI420537, H65282, AW469272, AW469280, AW959628, AW966534, AW966053, D58283, AW975618, D80043, AW966029, D57483, AW964756, AV699550, D80253, AW973334, AW958993, AV718489, AW978661, D80164, AW966531, D80366, AW975621, AW959799, AV699447, AV718440, AW960465, AV720028, AW978634, D80022, C14331, AW958992, AV718770, AW965163, AW949641, AW973541, D59467, AW966022, AW965177, AW973485, AV718844, D51423, D59859, D81030, AW966041, AV719783, AW966013, D80391, AW966065, AV720464, D59787, D80166, AV722801, D80195, AW959570, D59275, AW978648, D59619, D80210, D51799, AW964488, AW960553, D80240, C15076, AV719822, AV720791, AW966054, AV720203, AV718692, AV720731, AW966050, AV719188, AW973307, D80227, D80188, AW966062, AV719324, AV718938, D80024, D59502, AW959597, AV718633, D50995, AW975605, AW962082, AV718800, AW965197, AW965184, AV720211, AV718931, AV719557, D80196, AW973474, AV723927, AV724520, AW959136, AW959062, AW964477, AW956434, AW949656, AW949654, AV699927, D59889, AW949642, AW959202, AW960532, D80212, C14389, AW965158, AW964737, D80219, AW949632, D59927, AW973482, AW965185, D80269, AV718530, D80038, D50979, D80193, AW966075, AW949629, AW949633, AW962245, AW949645, AV719468, AV718707, AW949657, AW965175, D59610, AW960473, AW966059, AW956397, AW949653, AW949646, AW949658, AW949631, AW965196, AW949643, AW949618, AW973488, AW949655, D80378, C14429, AA305409, AV720878, AW959469, AW975613, AV701004, AW973330, AV720812, AV721386, AW966043, AW966023, AW753053, AW959582, AV723097, AW973447, AW960504, D80241, AW960564, AV700889, D80045, AW975623, AW960570,

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HPMBZ40	26	711500	1 - 882	15 - 896	AW104075, AA322168, AA318382, AW582134, AA559937, AA635043, AA309573, AA664669, AI890563, AA747333, AA083698, AI002831, F31565, AA327808, AA640478, AA307971, AA101115, BF438598, AV656583, T41261, AA962042, BE147478, AA614771, AA548695, AA179423, AA657363, AV709285, AI708675, BG121326, AI350430, AW393836, AW393837, AA083697, AA171770, AW393902, T59870, F21378, AA679905, AA515952, F20900, AA828709, AA179773, AA230071, AA327627, T58575, AA669666, AA340945, T73373, AA805827, AA328641, AA729868, F31199, AA729864, AW378613, AA182721, AA130896, AA364450, AA229102, AA299112, W32976, F29405, AA888657, AA328937, AA079176, AA383431, F33309, AA363495, AA328075, AW361074, AW059576, D11891, D51386, AA502814, AA507714, AA299168, AW582136, D11796, F17656, AW378614, BE747323, BF437529, AA746958, D55360, AA484708, AA767968, AA627228, AA507186, AI708996, AA082512, D52903, AI302193, D53594, AA329939, AA341403, AA827269, AA172100, T53280, AA748072, BF906802, AI302449, T53153, AA304439, AA341417, AA962113, AA522638, AA604015, T63562, AA484205, AA593695, N68907, T94322, AA501477, AA181035, AA181548, AA847052, AA583572, D12365, AA180490, AA507806, AI628828, AA630793, AU122870, AW276534, AW304926, AA622673, AA225033, AW270722, AW104696, AA578036, AA053440, AA773121, AA128815, AI679291, AW085649, AA621862, AW058229, AA736894, AA480608, AA665010, AI884565, AA321126, N31278, AA187890, AA244150, AA747111, AA191223, AW270043, AA593407, T50429, W52460, AA132470, D53323, AA328902, AA159715, D54432, W68495, AA167322,

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HLYEP52	27	732342	1 - 998	15 - 1012	BF971932, BF237781, AW338866, AI963716, AA573832, AA987495, AW058614, AA128438, H51921, BF732971, H27808, H94212, AA993608, AI159855, BE872759, AI469694, AI828778, W69653, AW873554, AI688311, N77573, BE898545, AW601461, AI741570, BF831400, AA160897, H49117, AI348273, H27183, AA158489, H44990, H92982, BE884960, AV709626, AA159945, BF873908, AI795832, AI795829, BE140739, AI816555, AA846337, H28378, BF810845, BF813075, AI816592, BE140751, BE140728, W69654, AI984845, AI961817, F15634, AW954779, R72015, AX011711, AF035771, AR070449, Z50150, AF004900, U82108, AC005600, AB016243, AB014460, AB026489, AB026490, AP001038, AP001732, and AP001039.
HTTEC47	28	745343	1 - 1010	15 - 1024	AU131337, AL133785, AU117996, AI798884, AU116829, AW847640, BE142866, AW836282, AU120388, AU121070, AV707591, BG170577, BF673669, BF345679, AW833146, AU137603, AW833143, AV649129, AA683309, AW976291, AU139654, BE144683, AI114469, BE062166, BE144698, AW836280, AW902129, BG109731, AW813625, BE157028, BE158876, BF513132, AV731068, AV731522, AW833033, AV731034, BF746208, BF770900, AW833187, AW854788, AW832969, BF800480, BF929942, AU122701, BF675777, AW813623, AW820037, BF830719, AW819804, AW819805, AW936057, AW819798, AW835724, BE066033, BF244129, AV731276, BF748007, AU119706, BE009738, AW853622, BE066010, BF853047, AW820049, BF675045, AW820116, AW835725, BE066035, BF808065, BF997232, AV712125, AI246137, BG164408, AW819881, AW820040, AW820126, BF944744, AW819806, AW845700, AW877560, AW835642, AW853349, BF754324, BE780891, AW845696, AL045241, AL046683, BF964660, AW820052, AW833180, AW817951, AW819969, BE062378, BG104752, BF756986, AW820114,

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HOFMO90	29	746416	15 - 442	AI929681, AW592729, AA648798, BG259038, AW250255, AW245532, AW651722, AW573263, AW250589, AI015535, BF031458, BF764886, AU124917, BF794818, AU125620, AU141564, AU142862, BF763514, AU125790, AU143619, AU120837, BE886545, AU125751, AI220039, BE258310, BE925039, BG005263, BF739929, AA024938, BE895457, BE383414, AA467947, BE276994, BF986402, AU125668, AA250731, BG251310, AU131885, BF219963, BF027149, T36005, BF218581, BE797690, AA211028, BE891460, BE885888, BF026383,

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HCHND34	30	762806	1 - 816	15 - 830	AL538129, AL525022, BE872112, AI111183, AI114736, BE896548, BE877234, AI174851, AV705883, BE875361, BE881218, BE881076, BE880128, BE879304, AV706307, BE875412, BE874647, BE879135, BE877386, BE877647, AV729201, BE898937, BE881222, BE876531, BE875889, AV726346, BE878894, BE875858, BE876704, BE874520, AI133323, AI133348, AL513828, BE880711, AV728251, BE879909, BE876043, BE878122, BE877496, BE876719, BE874662, BE877268, AV706779, BE878178, BE879695, BE876425, AV729465, BE873343, BE891387, BE867307, BE877150, BE877004, BE874747, BE875792, BE878626, AI147501, BE870155, BE877131, AV729314, AI750078, BE876651, BE877390, BE880762, BE898750, BE873954, BE874215, BE877497, BE874926, AV693283, AV725309, BE877757, AV705995, AL048390, BE873478, AV725316, BE880690, BE878213, BE879455, BE892487, BE874003, BE876550, BE897096, BE898560, BE877488, BE880425, AV702923, BE875968, BE891700, BE874696, BE877643, BE879522, AI749163, BE876062, BE870577, BE897811, BE876098, BE877242, AV710316, AI065146, BE868548, BE896982, BE899424, BE880602, BE876884, BE868527, BE879775, BE869133, BE874445, BE875601, BE868532, BE874422, AI114553, BE878330, AI110700, AL036120, BE875438, BE869149, BE879302, BE877542, BE898986, AV726493, BE879410, AV706277, AV760899, AI114569, BE876037, AV721544, BE880237, BE876785, BE879859, AI133444, AV726351, BE879895, BE867317, BE878477, AV709557, BE877726, BE878238, BE880722, BE898371, BE880140, BE875261, BE877598, BE875955, AI133486, AA639334, AV706033, BE878677, AV708006, BE875918, BE878422, BE881146, BE868603, BE881693, BE877813, BE896992, BE895621, AV702580, AV714977, BE879413, BE877674, AI174902, BE879761, AV709615, BE875062, AV723290, BE881506, BE880977, BE875398, AV705696, BE543600, BE894635, BE880958, BE880950, AV723029, AW583759, AI114723, BE878900, BE878010, BE880947, AV721627, AA723026, BE868786, BE874402, AV707010, AI721239, BE875536, AV723395, AV702695, BE881638, BE879688, BE878173, AV659215, AV708355, BE880276, BE877271, BE876568, AI833114, AV721920, BE881057, AI110881, BE880427, AI207615, BE880442, BE875310, AI110734, AV759353, BE881359, AI114585, AV708529, BE878468, AV721831, AI609232, BG179400, AV722162, BE881594, AV722611, AV702323, BE878381, BE881411, BE878333, AI720161, BE895091, AI114699, AV706568, AV726110, BE880705, AV700257, AI733732, AW583569, AI133302, BE877616, BE894655, AI110877, AV721391, BE880758, AV706979, AV705894, BE878086, BE877479,

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HAMGI86	31	785328	1 - 653	15 - 667	AL520509, BE407109, BE312514, AW294706, N23047, N28711, N23224, AW517021, AA039977, AA287636, AA286793, AW136370, AI362850, AA382819, BF684630, AW409954, AA312796, AI565859, AA312800, BF795529, AA382325, BF211504, BF184364, BF102863, BG106081, BF220088, BE279764, BE902929, BF239561, AI240475, AA229436, BE162216, AW590207, AW673504, BE538140, AA324312, U35117, U75488, A67520, U18422, S79780, L40386, AL080206, and A67526.
HLWCN67	32	794213	1 - 677	15 - 691	AW978308, AA369775, N53897, AA807270, W95818, W95857, BF724803, AI125532, BG117266, BF968973, AU128956, U69567, BF102704, BF965471, BE770768, AV758189, BF111890, AW274041, N55318, D45459, AA301769, AA434064, BF002861, C04552, BG001662, AI569610, AA610288, AW580433, AK002172, AF090904, AB020703, AX029226, U95000, AX029228, and X64411.
HOFAC09	33	806819	1 - 854	15 - 868	BE739621, BE379183, BE617530, BG108163, BE619662, BE748774, BF570337, BE305001, BG249872, BF569120, BE612784, BE619823, BE271125, BE619946, BE617896, BE271060, BE300237, BE617937, BF966616, BE738551, BF340609, BF688981, BG257657, AV713811, BF974766, BE293496, AV717562, BE293387, BF689303, BF220284, BE748652, BE619923, AA642201, BF688590, AI174682, BE279777, AV715664, AA641148, BE299551, AV652787, AI174681, BF683366, BE747352, AA857839, BE872623, AV718269, AA640951, BG105683, BE778293, BE393602, BE546109, BE250635, BF982878, BE531162, BF570115, BG178614, BG179165, BG163531, BE531088, AV717782, BE613177, BE902527, BE271042, AL514500, AA858434, BE738219, AA837571, AV685977, AV756374, BG034916, BE740524, BE262924, BE378440, BF984231, BG029312, BE388222, AV684312, BE748508, BG256740, AV702438, BF237938, BE408065, AI817627, BG163462, AW001149, BE622882, AU128631, BG180980, AV688195, BE260549, BG255882, AI708325, AV684830, BE881395, BE788254, BE787490, BE249917, BE909118, BE305209, BE735960, BE397738, BF982126, BG256362, BF686276, BF237724, BE559874, BE266498, BF059086, BE251388, AA632140, BE787304, BE300231, BE293776, BE547987, BE439558, BG250330, AA642980, AV698344, AV715876, BE794978, BF125097, BE793931, BG256096, AV685452, BE388457, AA857476, AW149599, BE889684, BE617898, AV714051, AV688156, AV684821, BE619643, AV717638, AV717113, BE737518, BE545839, BF965676, BE748476, BE250538, BG029641, AV645505, BE736394, BF983033, BG027429, BE745157, BG180061, BG113341, BE512833, BG168282, BF696011, BG118147, BE394485, AV716748, BE728375, AI749591, BF340890, AW001147, BF184101, BE250051, AA551057, BE903863, BG114266, BE305190, AV709267, BE293782, BE549134, AV714025,

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HRDEL61	34	824886	1 - 810	15 - 824	AI696793, AW162288, AV703259, BF821897, AI358089, F13749, AW819125, AV726885, AI963720, AV701116, AA071334, AW419262, AI821881, AI821918, AW504224, AL046409, AI745151, AA654781, BF750422, AA579179, BF821009, AI284640, BE301111, AI431434, AW410402, AA533033, AI076236, BF529327, AL120343, AW979204, AW406755, BF767028, AW753399, AA715814, AI358229, AL079645, AL037910, AA659627, BF668217, AW518220, BE138594, AL046746, AA410788, AW500684, AW021116, AW500029, AI755214, AI754105, AA581903, BE062729, AV764259, AI754567, AI613280, AW504686, AW858127, AI537538, AI623764, BG236628, AW872676, AI431303, R59567, AW504297, BE676915, AV740009, AV710482, AW673221, AI732151, AW575165, BG000961, AI133164, AW576251, AV761519, AI821714, AI792133, AI791913, AW970877, AW975049, AW157005, AA563770, AW276827, AW964231, AI733856, BF916934, BF589066, AI623423, BF678990, AL118991, BF677892, AA657835, AI620585, AI610920, BE049229, AI049676, AV735495, AA610491, AI281881, AW023111, BF805088, AI783911, AV761745, AI270117, AI636627, BG036665, AI821785, N23260, AW089589, AI457397, AI028510, AA878149, AW501806, AA130647, AA603323, AI054333, AV710066, AV742057, BF915247, AI963221, AV763583, AV761810, AW271917, AW833862, AW089322, AI017251, AI251034, BE300580, BF942454, AL134330, AW193265, BE139139, AW081194, AW499745, AI732764, AC002350, Z85986, AL136984, AL035701, AP000557, AL157877, U85195, AF047825, AC004983, AE000658, AC007957, L77570, AC004536, AC005899, AC007850, AC007537, AL136443, AC011449, AL137070, AL139039, AL133551, AC004985, AL121871, AL031053, AC005522, AL078614, AC023490, AC010463, AC008924, AL035071, AC008821, AC016655, AC007620, AL136097, AC008123, AC025588, AL354696, AC005086, AL137139, AJ239027, AL138828, AC008745, AC016898, AC055740, AC006057, AC004804, Z72521, AC006368, AC011464, AL133163, AL136317, AC004253, AL080285, AC011510, AL136296, AC010977, AC020910, AC010419, AL109804, AP000311, AC010087, X62357, AC018755, AL445195, AC006285, AL365505, AL357560,

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HDPOR60	35	828176	1 - 3339	15 - 3353	BE907538, BE250250, BF311047, BE906254, AV726530, BE304645, BF525388, AW959258, AW954291, BG118078, AI051611, BF916882, BE719457, AW966732, BF732249, BE719459, AW390157, AA150165, BF923015, AI928260, BE779329, AA457484, BE818400, AI188780, AI524627, BF329818, AA609346, AI184768, BF733484, AI348486, BE671307, AI598015, BE818415, BE764192, BE717662, BF733491, BF733492, AI674848, BF886247, BF886242, AW197044, BF888665, BF888510, AI369052, BF888666, AA984504, BF513927, BF888512, N58740, BF888662, BF888671, BF812194, H27264, BF888524, BF377972, AW080528, AA458747, BF371802, BF377969, BF093530, BF888530, BF376487, AW025603, BF885116, BF766670, AI283519, BF888682, N90132, BF081241, BF093542, BF872063, BF377968, BE818399, BF093531, BE872720, BF093535, AA652251, W16733, BF093536, Z43110, BF093539, BF934232, AW294491, BF884943, BF093532, BF093543, AA813169, AI905629, AA229779, H14451, BG012148, AI692605, R50198, AI126253, BF093546, AA865539, AA341212, BF885117, R83103, BF089975, BE938102, AI886490, AA385992, BF081230, AI685596, H70564, BF762747, H50721, AW087793, BF352676, AI364918, BG013986,

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HPRTS71	36	828574	1 - 1032	15 - 1046	AW118056, AI800662, AI589171, BF591232, AI188335, AW082251, AI818095, AW021236, AW591559, AA648866, AW246660, BG230460, AW452998, AI083735, AW835356, AI167977, AW468639, BG109889, AI470164, AV651830, AI334390, BE673379, AA741201, AL523450, BE070373, BE070459, AA643779, BE070441, BE548231, BE696414, AI248596, AW062368, BF055036, BF111561, AA614258, AL037459, T92093, AI420092, BF741961, N79460, AW393612, T92929, AA649698, AA716590, T93045, T29513, N98655, BF089688, T98007, R28667, AW974688, AI470059, BG179958, AI520746, T92007, AW514438, AI565207, AI252942, AI014682, AI276530, AA707158, AW580299, AA847513, BF803888, AI224129, AV747633, AA452013, AF305057, D00596, X89602, and X67098.
HOHBI90	37	828862	1 - 405	15 - 419	AA021223, BE548133, AL045143, I15526, I15525, M76125, AC011510, X57019, X59560, X63535, and X66030.
HOHAL47	38	828872	1 - 907	15 - 921	AU132881, BF220328, R87908, BE613810, AW250257, AA931266, AW015928, BF095373, BF909602, BF095352, AW502696, BF796996, AA370819, AW502753, BE327008, N49168, AI800258, AI738786, AI651019, BF431451, BF891293, AI341119, BE464154, R87900, R87888, BF761409, BF761414, BF761411, BE672137, BF766414, BF761395, BE551754, AB020866, L27841, and AB029291.
HYASE58	39	829298	1 - 820	15 - 834	AL520115, AL520114, BG249568, BE858532, AI719186, AL524961, AA978354, AI963126, AW168149, AI016474, BE464809, BE541556, AW274265, AA126722, AA948354, N95214, AA779559, AI143841, AA988766, BF109578, AI052155, AI057145, AA868690, AI123988, AA862955, AA531469, AA565025, AI040746, BE315358, W58681, AA883150, AW973071, F27739, AW469738, W25247, AA677158, AA136191, R72558, AA137218, BE774145, BG163522, AW804292, T85571, R06411, BE559994, AI369527, R06410, BE931292, W58682, T85572, BF984740, AI202246, BE771601, AW204406, T98604, T98605, AA126819, BF804866, M29971, E02953, X54228, M60761, M31767, M84524, S61804, M76704, X54862, X65081, AL355531, S52068, S52071, S52289, AR040785, and X61657.
HKAAH95	40	829958	1 - 569	15 - 583	BF968527, BF972443, BE888293, BF245922, AI432365, BF984449, AI376939, AW959079, BF111350, AI809862, AW967166, AI708626, AA743821, BE274422, AA316016, W31195,

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HTTIQ02	41	829981	1 - 440	15 - 454	AU133091, AU142098, AU141602, AU134034, AU135799, AU141415, AU136549, AU141554, AL520149, AU141624, BF309998, N44941, AA165467, BG164969, BF305751, AA370928, AI025054, BE544595, BE297897, BF203543, AL047272, AA490707, AW998147, AW998144, BE719597, AV650018, L19871, U19118, and M63282.
HWACG91	42	830195	1 - 647	15 - 661	BG033793, BG255945, BG259666, BE730050, BE794184, BE280411, BE262457, BE407137, BF974510, BG260129, BE387574, BE250058, BE729393, BE900244, BE280432, BF317365, BF975884, BG255124, BE384164, BE875157, BE275535, BF697620, BE249873, BE729424, BG104941, BF528476, BG178885, BE389393, BE742299, AA160739, BE279276, BE730823, BE730234, BF696116, AI905415, BG169584, BG248765, BE409699, BE409459, BE383471, BE279295, BE514728, AI693883, AI906409, BE733527, AA133328, BE734917, BE747004, BE778282, BG120073, BG116573, AI906399, BG252353, BG250627, BG115053, BF205427, AA932527, BF974800, BF976607, BE275617, BE747869, BE258222, BE899354, BF667612, BE732117, BE394529, BE019949, BE255854, BF663000, BG115598, BE270894, BE877328, BE894791, BE742367, BF981923, BG025205, BE270877, BE313842, BE277239, AW246075, BE731739, BF689778, BE266619, BG122027, BE275677, AW327437, BE958080, BE293564, BE741359, BE279606, BE262807, BE731616, BE278518, BE797742, BE280931, AI906381, BE259001, BE620197, BF342810, BE278592, BE269494, BG033349, BE799713, BE252649, BE790350, AA069850, BE744820, BE731628, BE958554, W28216, BE269344, AW246351, BF665331, BE409170, BF346422, BG025476, BE892710, BE251197, BE729414, BE395317, BE747019, BE379494, BE535406, BF980658, BF309487, BE910196, BE795220, BG260707, BG255740, BF310723, BE265360, BE297749, BF311424, BE409537, BG165401, AA186725, BG034975, BF310637, BE744823, BF339822, BE883169, AW675050, BE884838, BE275911, BE394260, AI905506, BE736798, AA131028, BE296169, BE385509, BE735183, BE273644, AA160637, AA157966, BF796949, BG171791, BF103552, BE278910, BE735411, BG260083, BE895233, BF206952, BE264220, BG255060, AA313667, AA076309, BF149164, BF797136,

					AI809346, BF794443, BF309985, BE793349, BG248853, AA159110, AA190534, BE262091, BF128662, BE536828, BE251454, BE263943, AW662648, AL038584, BG255561, BF696737, BE792806, BF313073, BE742815, AA101958, BF792436, AI906370, BE206810, BE889820, BE898859, BG165862, BF315593, BE255244, AA113902, BG122753, BE897628, BE727594, AI218219, BE746344, BF055113, BF725362, AA587341, BE382571, BE277151, BE262004, W74583, BF725096, BF315746, BE388410, BG117808, BF304116, BE274326, BE728690, BG116304, BF315671, BE875140, BF983277, BF308437, BE875834, AA158902, AA155696, BE733144, BE537657, BE293648, AA158943, BE875741, BG120928, BE410167, BE391803, BE251603, BE729093, H69946, BF663924, BE393117, BF972713, AA182917, BE780890, BE394391, BG031646, BF797457, BE315191, AA643715, AA299820, AA364873, BF985994, BG122761, BE253108, AF275719, AX047377, AL136543, AK025370, J04988, AL139392, S45392, AC006226, AL353581, AF288819, and AC013410.
HUFBX52	43	830497	1 - 1969	15 - 1983	AL513910, BF338363, AI799888, BE392997, AW316671, BE044614, AL042665, AA114835, BE394176, BE857118, AA114976, W51953, AV702013, AI972232, BG025156, BE673213, W52502, AW205785, AW137401, BF879476, AI498690, BE504635, AI870560, F33285, AI696138, BF847455, BF847461, H42144, AW797536, AW580466, AI383137, BE504647, BF194734, AW291200, AI567040, T58430, AV707626, AV705123, AV702887, AV705196, T58462, BG104539, T29553, AV705977, AI972231, AI951152, AA593693, AW873877, T47089, AA393219, AA036671, N77388, AV706493, BF093800, AI686156, AV703987, AA575857, AW959494, AV702830, AV701517, H42145, R00971, T47088, AA063592, D11534, R00972, BF826969, BF345006, BF766206, BE840120, BF378651, N52428, AV707224, C01052, U24488, M25813, X73959, Y11915, X87243, AL049547, AF077974, S38953, U89337, AF019413, X71937, L26263, AB010266, AC006289, AF030001, AF049850, AB015623, M83939, U24489, AF086641, M12792, M12793, M17252, M26856, M28548, M26857, M13936, M13935, M11267, M12918, M64933, AB039881, U56853, U56854, K03234, M92836, and M15009.
HWLJE49	44	831453	1 - 510	15 - 524	BG251415, BG027650, AV716313, BE744852, BG168126, BE875004, AV712837, BE563257, BF183014, BG113939, AV701796, BG260019, BF244649, BF974779, BE740291, BG114363, BG035325, BG027799, BG169309, AV722365, AV712753, AI887549, BG027575, AI076353, BF725392, BG167147, BF663267, BG059083, BE300764, BE742593, AA806402, AI682046, BG027579, BG255168, BE906641, AI188649, BF967533, BE513190, BF182834, BG180632, BG113207, AI144531, AI149488, BF345318, BE675790, BG026111, AL048205, BE207355, AW277103, AI612881, AI761676, AI299022, AI270732, AA308274, BF575148, BE379881, AW005575, BE675232, BE729684, AI302970, BF684952, BE259873, AI748792, AI832372, AI342462, BG255930, BE728928, AW304345, AI917533, BE388883, AA308142, AI270352, AA315030, AA314014, AI720893, BE208370, AA181838, AI370898, AA314940, AI735477, AA316359, BE909454, AA582161, AA313264, AV705734, AA316330, AW338556,

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HLQBT44	45	832454	1 - 735	15 - 749	AA745837, AI554448, AI830118, AA928341, AA669073, AA630270, AW304776, AI418823, AA630539, AA614639, AA701987, AA507015, AA775672, AA577574, AA947337, AA425865, AA740316, AI925815, AA872373, AA481869, AI287247, AW170694, AA058866, AI141303, AI686727, AA482053, AA456568, AI984134, AA481821, AI251811, AA779177, AA496675, AA938571, AA894451, AI052452, N63977, AA524693, T57094, AI357992, BF594112, AA523604, AI288847, R92183, AI539613, AW194037, AI689207, AA455766, AW129939, AA410742, AI278744, AW805186, BG011966, AW071224, T68990, AA425994, T71879, T58711, AA775671, BG010690, AA235744, H93778, AI631122, AA668735, BF447423, AI933935, AA034382, AW801283, AW801602, AA627657, AA057664, AA551804, AI918451, T71878, T50658, AV692045, AA034383, T72829, C21135, AW515583, AI114853, AI245066, T72828, BF941121, N80768, BG010676, AI141304, AW393623, AA477973, AI803211, BG013596, AI494106, T25929, AW004686, AI500081, BF908767, AW842027, BF909560, BF868853, BF908693, BF909563, BF911325, BF868849, BF908765, BF801119, BF848926, AW243946, BE173882, AW878618, BE001388, BE079012, BF890845, BE073329, BF942940, BF990699, AA400639, AW843089, AW833203, BE166207, AI708714, BE676937, BE085445, AA810087, BF908691, AI039389, BE737951, BF908768, BF911435, BF909425, BF810304, BF909434, BF909438, BF733544, BF848896, AA577947, BF845946, AA559987, BE079182, BF896106, BE079011, AW898529, BF926033, BF874446, BF874408, BF987376, AA577987, AW884119, BF868852, BE146291, AA578162, BG002961, AW176716, BE001389, BF909558, BF908760, AA559135, BF875608, AA558407, BF943834, BF943838, AA504031, BG002880, AW797672, AW014901, BF875343, BF807164, BF934749, BE094775, BE072043, BF905359, AW898530, BF943835, BF878034, AW840660, BF990659, BG002963, BG002966, AW875187, BF762630, BE083383, AW878617, BE085444, BE828029, BE077159, BE075548, BG002874, BF990679, BG002969, BE079010, BF846180, BE094456,

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HSLGG58	46	833088	1 - 1532	15 - 1546	AL529745, AL521111, AL521110, AL530765, BG035239, BE741863, BE868745, BE783786, BG115436, BE743770, BF980935, BF032529, AA927626, BG170791, AI360106, BE792111, AI859705, BF515765, AL530323, AI696973, BE673724, BG059565, AI889305, AW194003, AI435237, AI015554, AI425058, AI653782, AI674150, AI292242, AW008174, AA443658, AI052216, AI689404, AW302350, AA682485, AI039198, AA069797, BG055892, BE740312, AA929022, AI559492, BF966723, AA507307, R89566, AA702532, BG055961, AI355925, AA436762, BF083167, BF083176, AW304693, BG152337, BG055803, AA447045, AV743176, R88883, AA069844, AW015302, N62841, AA340462, BF917627, H12262, AA700417, AI866372, BG222934, AA554984, BG036915, AW075240, AI364688, N77748, AA937871, AA507304, AV735802, AW263377, AW960326, BF038245, BF311363, AA770456, AA657774, AI904488, BF530542, AA327748, AW390282, R85655, AA609069, AW188781, BF885085, AL036980, BG165051, AW302992, AW673679, AW673635, AW268067, BE972180, BE964661, AV706744, BG105895, BG163618, AW946806, BG122481, BF343568, BG151247, AI336633, AI829327, BF764538, BF339594, AI349957, AW150511, BF816037, BG257535, BE886728, AI340627, AI433384, AI357316, AA830821, AW302965, AI620284, BE965121, BF884999, BE047952, AI500662, AI783504, AL036396, AA640779, BF344691,

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HCHBQ33	47	840756	1 - 507	15 - 521	BF983424, BF211760, AW157053, BF684202, AW162417, AW162988, AW162603, BF026414, AW157332, BF683534, BF976126, BG032643, BG163354, AW156922, BF974967, BF975973, BF685471, BF969890, AI680129, BG249316, AW157397, BF203227, AI283030, BF797083, BG113896, BG025992, BF969919, BG027552, BF794777, BG029512, BE409260, BF965750, BF338609, BF972865, BF972470, BG106216, BF310371, AI625563, BE314799, AI499186, AW157806, BG142254, BF316903, BF343200, BG033251, AV752124, BF796091, BF315655, AU119393, AI887440, BE794493, AW276357, BF310677, BE786311, BG165212, BF969189, AA314895, BG024853, BE777933, AU126898, BF726955, BF342583, AI090099, AU126739, BG253776, AW029096, F24940, BG057843, AW118506, BG110794, AI928061, BE742652, BF727358, AW160561, BF974254, BE797276, BG059640, AW966494, BF337295, AA583793, AI475867, BF313677, BG142263, BE792984, BE019795, BG104756, BE900127, BE313100, BE732159, BE560126, BE897114, BE272977, BE275883, BE383590, BE409100, BE886687, AU149662, BE293298, BE559675, BE513645, BF037214, BE798509, BE798984, BE874485, BG032309, BF680826, D52392, BE250986, BE253387, BE313181, AA845270, BE314620, BF034696, BE793979, BE882443, BE797123, BF237943, BE736165, BE276565, AA308667, BE790613, BG056375, BE793578, BE793105, BE293961, BE278732, AW328693, BE254190, BE256721, BE909905, AW768638, BF125047, BE795518, BE255031, BE383224, BE789157, BG142170, BE907032, BE620944, BE878341, BE797140, BE276635, BG034095, BE878240, BE909385, AI913962, BE542091, AI735731, AA714332, AA316221, BE901680, BE540321, BF700921, AA524000, BF127837, AA947503, BE254299, AI126588, AW021371, BF026845, BE393303, BF038496, BE888490, AW327273, BE735597, BE561847, AI631371, BE906540, AV689462, BF211684, AW966489, AW162175, BE409686, AW966488, AI523924, AW163020, BE901983, AI766436, BE394377, BE260396, BE397339, AA912488, N54519, BE563380, AW163636, AA514900, AA088705, AI718867, BE048153, BG113893, AA506094, AA159790, BF125341, AW161303, AW769068, AA115703, AA988424, AI198534, AA112416, AA714522, AI581865, BE795020, AW163458, AA507481, AA501840, BE313575, AI469509, AI797529, AA192753, AA720655, BE563655, AI200353, BE887791, AA577162, BG142255, AW515839, AI863295, AA158148, AW161036, BE559641, AI270389, AA603073, AA989575, BF210694, AI564456, AI453217, AA846028, AI925625, BE621765, AI817585, AA515423, N76221, AV745134, AW083236, AA313883, AA187267, F24511, F27741, F26359, AA776904, AA316420, AA181237, AW615576, AA157076, AI287833, AA835523, AA493670, AA846115, AI922586, F31236, AX015385, E06004, E01533, AC007969,

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HDTMK30	48	840862	1 - 518	15 - 532	AI831962, BE676430, AW162549, AI017574, AI017570, AI935049, AW951729, AW070785, AW160944, AI433969, BE379169, AA316765, AI208340, BE908740, AA570273, AA308469, AA932397, AA971868, AW328383, AI302264, AA335512, AI375912, F20835, AW050941, N40545, N46592, AW438545, AI276310, N92934, R70374, AI590641, BE395213, AA873604, AI610571, AA648290, AI392906, AA629912, T94441, AI580872, AV706442, AW438488, T94528, AA906326, AA621581, AI261782, AI095210, AA910827, BE392525, BE833101, N56229, U09770, AP000358, AP000359, AC024247, U58630, and M13018.
HDPFX64	49	841088	1 - 1368	15 - 1382	BF690243, AI635310, AV705585, BF967716, AW516059, BG171153, BE379346, BG165946, BE262120, AW103919, AA586820, BE270450, AA580196, AW392940, BF689694, AA809239, AI023735, AI031575, AI038145, BF212877, AV653577, AW025039, W46346, BE727824, AW005149, N94381, AA931405, AI309211, AI341743, AW024649, AI093535, AI369772, W47346, W16578, W42813, AW945189, AV705723, BF132768, AA992145, AW675359, AA907868, AA070469, AW135787, AI300765, AA776545, AA490938, AW606545, AI025359, AV694879, W46347, BG036926, AA725448, AW750158, N66103, AI244482, AI765611, AI344462, AI680024, H05080, R42090, AV703075, AV719545, AA916199, AW386885, W42724, AA576647, AW025028, F00072, R00895, AV683358, AW581256, AV695314, AV684515, W57707, AW945190, AV691040, BE831134, AV693290, N79589, W57783, BE711900, AA362580, AA745683, AI033697, AW581255, R88810, BF132335, AW951545, AV685847, AA374786, T29875, BF903989, AV696538, D11601, AA491124, T16992, AI914576, AA305378, W31989, BF953874, BF953867, AW197238, R21561, BE140647, BF959687, BF959697, H05540, R42941, AW406968, W47450, J02888, AB050248, U07736, U07732, U07733, U07734, U07735, and U07731.
HODFG71	50	843485	1 - 2226	15 - 2240	AC019187, AF235098, AL049743, AL050335, AP001675, AC010348, AP000431, AC010283, AC005409, AC002554, and AC006992.
HCE3I65	51	844534	1 - 288	15 - 302	BF380320, BF770784, BF770772, BF770765, BF770108, BG109313, BE884633, BG110701, BF770763, BF380303, BF848233, BF770117, AW753076, N94851, BE887181, AW384469, AW384552, BE771991, H21705, AI741955, AI963814, AW299769, AI917621, AI742118, R55420, H42724, AW205801, AI394684, AW360906, AW360994, AW578414, Z19511, U91329, AB014606, and AC004771.
HSAVH65	52	847355	1 - 758	15 - 772	AW080832, AI693734, BF793712, AI564525, BE869501, BF037343, AV719716, AW024144, AA523950, AW475057, BF827012, AI185475, AI197788, AI708671, AV660309, and AR062277.
HBXFT41	53	847647	1 - 989	15 - 1003	AA778868, AA679725, AA361583, BE727943, BE798065, AA626529, T19700, AA384998, AA374709, AI908896, AI908908, BE255062, AW245790, AA280060, AI114472, AV726479, AA085949, AA081907, BE269296, AV709611, BF725352, AV714707, AV706440, BE790718,

					BE296483, BE745172, AV755536, BE274694, AU119430, BE744131, AU119428, AU119550, BE746420, BE620078, BF674845, BG260326, BF665845, BE254030, BE791005, BG119741, BF037583, BE744908, BF983949, BG251764, BF571453, BE898540, BE792102, BE729491, AI908937, AI908942, AI908943, AI908935, AI908888, BE747668, BE612555, BE620616, AI908938, AI908907, BE794070, AI908939, AU142280, AI908936, AI908930, BF308923, AI908944, BF208892, BE739876, BE746956, BE792493, AU118023, BF983503, BE388929, BE866950, BF310784, BE562649, BE792512, BE729603, BE798377, BF306882, BE542411, N88908, BE732108, AV704181, BE280824, BE799494, BE733715, BF683813, BE796036, BE394532, BE787810, T70160, BF980664, T79052, BE793454, BE271512, AI908946, AV752006, BE304426, AV752905, BE259857, BE798780, BE743625, BE796415, BE279618, BE410674, BE276446, BG027214, BE784784, BE384913, BE264022, BE382420, BE383098, BG122701, BE733796, BG254133, L02426, AL356747, and AC008774.
HBMCM38	54	847821	1 - 803	15 - 803	AA665893, AL080243, AJ277546, AC005056, AC005179, AC004671, and AC016597.
HACBO42	55	849064	1 - 1701	15 - 1715	AW961071, BE703222, AI703476, W51947, AA775876, AW118126, AW419310, BF055108, AI298553, AI168160, AA976583, AA931093, AI343013, AA622237, AI056138, AA101674, T19393, BF222266, BE327125, F12518, T74004, AA825247, AI348336, BE173228, H08634, AA757564, T32177, H08635, BF061085, BF060724, BF446952, F10138, BF058335, BE502582, AW051846, AA426547, T87212, D81092, AI690133, D55877, and AB040799.
HODBF86	56	859572	1 - 913	15 - 927	AV694711, and AL049744.
HOABP90	57	859622	1 - 1239	15 - 1253	H84974, AI915939, BE396949, D51418, AA158104, D51544, AA828306, AC006387, A12297, M31158, J05692, and M12492.
HE8UE42	58	862010	1 - 1640	15 - 1654	AL515943, AL520278, AL531137, AL515942, AL520279, AI217895, AW960744, BF970078, BF001249, BF036496, BE395420, AI983150, BE277851, AW385698, BF979048, BF688139, AW374106, BE395502, AI660124, BF541042, BF210794, BF036241, BE567389, BE778929, BF103631, BF209890, AI339010, AW374124, AA166971, BE564629, BE971080, BE276625, BF509403, AA542906, AA689356, BF695952, AI285269, AI346870, BF541205, BF030313, BF243030, N27706, AW236815, BE567683, AI821074, AI821227, BE566782, AA166818, AL134542, BF570861, BF059406, AA836112, BF130491, BF695731, D20721, BF677074, AI221030, BG118818, BF106059, AA627350, AW027663, N35710, BF674060, BF029128, BE933681, BE933586, AI221246, AI285231, AW372396, T95430, AW372395, AI699709, AL134543, AA055338, AA449417, AW197834, BF030982, R83129, AI418208, AA375954, AA450383, AW958166, AA961046, N20259, AA336834, AA226636, AI911109, AA225691, N20865, AA825421, AI932769, AA938413, AW197872, C03633, AA370379, N29162, AI620095, AA055337, BE694074, AI932771, BF697063, BE468082, AA976076, AI821821, AA173926, AA173884, BE857593, AA569611, AI821883, AA772955, AW383971, BE898721, AI921241, AJ224875, and AF271985.
HUSJI59	59	862481	1 - 476	15 - 490	BE907643, AW327356, AV735093, BF792025, BG164383, AV756498, BG109142, BG029612,

					BG109661, AI686064, AW104310, AI524513, AV744389, AA128297, BE560561, AV757265, F36107, AI125537, H72703, AI302668, BF678743, AV682013, BE905381, AA130380, F27615, BF216773, AV712461, AA934903, N99899, BE394168, AI125542, H72704, AI796626, AA314160, AW518185, W68325, BF975221, F24460, AI832538, F30577, W68324, AI497592, AA054941, AA872295, AA070687, AW006071, AV758709, AA962230, AW274476, AA884221, AI197806, AI198400, AW005308, T79469, AA302263, AI139027, AA722653, AA594400, BE737684, AI718047, AA652237, BG008943, AI302442, AA054942, BF680026, AI245664, F25027, N63141, AA927181, BF207713, F36673, AA846168, AI660015, AA908189, D50999, AA329037, BE738658, AI589655, AI499968, AA366606, F30607, AV711850, AA515879, BF238919, BE041814, F26441, AA769698, T79560, F34346, BF214417, T97719, AA483049, BF091216, AI207479, AA302083, BF216648, W25240, T97822, BG059341, AA687617, T85228, AA492203, AW793013, AA535395, AA602796, AW238261, AA216085, F24359, T89188, AW514738, BE615484, AA649489, BF246601, AA642762, AA935966, AV743817, AA634729, AA886084, AV744110, BF239063, W55855, BF383068, AA344058, BG099692, T24567, AA062811, BE707385, BF246068, R29682, BG230802, BG231094, AW362810, AW131255, AA128316, BE567457, R31939, AF085986, AF070661, AF086763, U73629, AC004770, AC004228, AF119902, and AF137396.
HSSDM07	60	863515	1 - 2584	15 - 2598	BE886761, AL520319, AW966039, BG252451, AL520320, AW375346, BE733511, BG114170, BF965742, BE559952, AW992850, AI829890, AI762105, BE788349, AI140601, AW365644, AI720778, BE740440, AW138255, AA772248, AI826338, BE502698, AA609490, BE927727, AI337251, AA971588, AW000925, AW301625, AI126519, AW673462, BF445347, BE327631, AW451288, BF111138, AI948721, R56414, AI684485, AI024528, BF111141, AA971582, AW675784, BE410672, AI363500, AW192954, AA565322, AI420978, AI263464, AW300687, BE348598, AI218550, AI369735, BE552303, R52184, W15529, AA022472, AA992460, N92817, BF091934, W31215, AI500339, AI906867, W39653, BE884207, AA255525, BE743589, BE674618, AV653705, BE618430, AA456635, AA772558, H29107, AW168493, BF026061, R56415, Z43129, BE387896, AA889111, R52092, BE811013, BE810908, BE810888, BE810898, BE810993, Z39214, BE810943, BE831903, AA322368, BE831912, BE810913, BE810939, BE810936, BF984499, T30757, AW901051, BE811016, AA364978, F02409, W04545, BE810887, BE811012, BE810873, BE810911, AI650748, BE810949, H29005, AW581134, AW581202, BE810871, AA490627, AA382734, AA256709, BE810969, AA023006, BE811003, W26238, BF529119, AW581211, AI783932, AW385906, F33591, R11750, BE963464, AA382733, W24938, C00533, BF092258, BF092249, AL122054, AL137324, and U67085.
HBCBW52	61	866444	1 - 1488	15 - 1502	AI732563, AI732596, AW469418, AA132859, AA053401, AA132947, AA053416, AA131083, AA131111, AA053057, AI439525, AV756663, AA525818, AW974363, AW020094, AW021399, AI521525, AI572680, AI049999, AW020150, AI348780, AI797998, BF814446,

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HOGAS18	62	867969	1 - 906	15 - 920	AL049843, AC078889, AC005231, AL096840, and AC013434.
					AV759518, AW827240, AI133297, BF347791, AI932493, AW827130, AL042753, AV762395, AA483929, AW023990, BF347740, AI751216, BF337291, BG153869, AW857802, AI499588, AA846952, BE065673, AA664909, AV739452, T06754, BF679256, AI039584, AW872348, BE782280, AV755907, AL039145, AW020340, AI583283, AA633753, AV745092, AW827120, AA961035, AI471887, BF677892, AA634889, BG249643, AA458703, AW963750, AL038705, BG109996, AL119691, AV733824, AW275510, AL135377, AW512484, AV742875, AW235497, AW168618, AI538870, AW270343, AA531079, AU140328, BE297262, AI345157, AA547947, AW021735, BF437493, AA584167, AV736964, AV710066, BF816072, AA533303, AI687343, BF885142, AV733627, BF902055, AW866226, AI445674, AI732547, R86151, AW303002, AW960545, AI247199, AA661921, AV763550, AI284640, AV764307, AI536665, AI872020, AA569471, BE378770, AW021207, AW472872, AV740801, AI311927, AW149339, AW969870, R24887, AV764578, AA101689, BE252421, BE139146, H71429, BF942454, AA467932, AA639326, AA493695, BE147488, BE973754, AL046409, AI956124, BF698704, AW302903, AW084466, AV734666, AL045808, AL046156, AI568678, BF738242, AW148507, AV760378, BE164494, AI888759, BF874664, AA468022, AV760207, AI801482, AL042853, AI798266, AA533333, BF691714, AW968181, D58349, AI873990, AV762098, AV761547, BG113106, AW302013, AV738993, AI382825, BE253048, BF970654, AA632600, BE967622, BF699964, BF185578, AV730301, AA541423, BE907585, AA502104, AA309257, AV710996, AA320966, BF697673, AA490183, AA954924, AW327868, AW419237, AL048925, AV703942, AV707949, AA683238, BF792954, AW833862, BF792883, AV763354, AL044940, AI969436, BF681661, BF680084, AV763971, AL044904, AU121503, AA765736, AA650211, AA847499, BF853144, AI270117, AL049766, AB037825, X55933, AC073316, L47228, X55929, AC006483, AL031279, U67831, AL008718, AL136980, AC005900, AL359763, X54177, M37551, AL136311, X54179, AC006930, AC023154, AL049870, U57005, AC003108, AC002310, X54181, X54175, U57008, AL080315, X75335, U18392, U18394, AB023798, AL354670, AC016939, AF109907, AC005221, AC005815, AC007881, U57006, AF038458, U18395, I51997, AC007014, AL035455, AK024741, AC007537, AC010282, AL031774, AL137019, AC003101, U07562, AC016601, AC007226, AC007907, U18391, AP000962, AC005180, AC006530, AL356414, AC004890, U57007, AL161422, AC020934, AC004150, AC025593, AL049760, AC002115, AC025447, AP001667, AC010154, AC020956, AP000472, AC007298, AL445225, AP000307, AL391119, X55926, AC008960, AF015151, AL355094, AL022163, AC006226, AC023275, AC006211, AL157776, AC007671, AC004977, AC005527, AC010789, AC007383, U57004, AC009244, AL031281, AP001683, AC035150, AL162377, U18393, AC007546, AL121886, AC005517, AC034246, AL050318, AC025434, AL135927, AC007227, AL031847, AC008033, AP000088, AC004802, AL122001, AC020904, AC008733, AP000550, AC015651, AL096840, Z83733,

					AL096861, AC006965, AC010271, Z93023, AL135785, M89651, X68500, AC009226, AC004381, AK026037, AC010643, AC012351, AC005146, AC024168, AC010102, AC004634, AC005944, AP000961, AL162872, AC005406, AC017019, AL049749, AP001054, AC002468, AC005046, AP001820, AL022238, AL161665, AC010170, D83989, AL022725, AL023494, X12919, AF064859, AC011548, AL035587, AC078842, AC022542, AK024096, AL031846, AL356299, AL049796, AL157760, AL159152, AC006254, AC004631, AC004712, AL135928, AB051144, AL356280, AC005179, AC016543, U57009, AL117347, AC016025, AC005015, U18387, AC005212, AL161731, AP001694, Z83822, AC004263, AL109965, AL138759, AL133276, AL049758, AC026723, AL110292, AC006037, AL136295, AL137786, AC011484, AL079303, AC007051, AL157951, U62317, AL022721, AL135786, AC011738, AC005004, AL136223, X76070, X55927, AC005261, AC007919, Z86062, AC004990, AC007749, X53550, Z83818, AL049712, AP000280, AC002119, AP000553, Z83826, AC012068, AC005881, AL008728, AL109840, Z98200, AL109976, AC023105, AC005535, AC022493, AC005771, AL138688, AP001598, AC008664, AL354834, AL353701, AF064858, AL031289, AC008521, AC008267, AF010238, AC006050, AC008745, AB012176, AC005747, Z71187, AL162615, AL023882, AC007666, AL138717, AK021821, U67801, AC012055, AP001415, AC004230, AC018662, and AL157756.
HHSDL18	63	869701	1 - 1374	15 - 1388	AA812573, AL518998, AW972473, W73306, AL522221, AI809692, AA513449, BE501387, AI148527, AW452872, AW245994, AA954445, H57889, AW183378, BE872438, AA813225, AI619978, BE794663, AW197888, BF088329, R24069, BF209308, W73041, BE502424, R24121, R26598, AW245458, AI929294, AA249846, AK024151, AL121754, AC008155, AC025593, AC004690, AC083870, AC005011, AL121897, and AL022238.
HTFMS34	64	870486	1 - 447	15 - 461	AW402328, AA354692, AA724612, AV758954, AV744331, AA158742, AI768253, AA353944, AW001224, AI857605, AU156990, AI830105, AA987516, AA588890, AW979250, AW979200, AW974813, AW969719, AW979221, AW975126, AW979156, AW970932, AW973116, AW975987, AW973183, AW975409, AW979220, AW979219, AW973808, AW970064, AW979284, AW974983, AW972802, AW970030, AW975427, AW971985, AW979197, AW975951, AW975012, AW971097, AU137027, AW974802, AW971070, AW970564, AW973136, AW970877, AW975928, AW974987, AW969682, AW973771, AW972762, AW973103, AW971963, AW979145, AW972699, AW975070, AW973217, AW973814, AW972417, AW979140, AW971068, AW976019, AW971949, AW976008, AW969751, AW975656, AW975004, AW979228, AW979194, AW969753, AW970875, AW970921, AW969735, AK024342, AL121928, AL050035, AL135904, AC004889, AL136137, AC009060, AC006480, AC005587, AC010605, AC005783, and AC005696.
HLDOG81	65	874506	1 - 1220	15 - 1234	AL521118, AW339982, AI827788, AI627750, AW575122, AL531441, BF967087, AL038656, AI888509, AW156877, AI094580, BE349949, AI963436, AI634293, AI891103, AW080820, AA910949, AW009916, AW338663, AL525766, AA514770, AL037705, AI924086, AI951034,

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HTXQF81	66	874608	1 - 1226	15 - 1240	BE735657, BE794634, AI346435, BE794294, BF035725, BE540828, BE736917, BF971130, BE874911, BE875498, BG163362, BE619340, BE543544, AV708235, AI813687, BG168124, BG029001, BF310923, AV703089, BE546820, AI523881, BF034887, AI246030, BE515214, BE789330, AI565163, BG178201, AA402794, BE784412, BG169860, BE878355, BE393961, BG025146, BE880077, BE874897, BE790171, BE786644, AA477593, BF968299, BE259495, BG180371, AA161137, BE394326, BF130503, AI394235, AI814324, AW328354, BF978913, BE909230, AA873099, BF093785, AA887676, AW752983, AA622341, BE048130, BE266971, AA161115, BE909193, AW386295, BE870857, AI280907, AA421577, AA552244, AA574027, AA453330, AI523581, AA826619, BF677836, BF030389, AA464842, BE620003, AA766218,

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HCRNG90	67	874787	1 - 1061	15 - 1075	BE891902, AW271686, BE677446, AW025554, AI420969, AL521237, BE879239, AI202304, AA375089, BE245380, BE246652, BE547456, AA337142, BE879198, BF218778, X55740, D14541, J05214, L12059, and U21730.
HPWCL64	68	874891	1 - 653	15 - 667	AA531009, BF114862, BE645201, AI803060, BE746455, BF111457, AW058661, BG060155, AW957837, AI871128, AI040865, AI635619, AA279688, AA314121, AA291325, BE044274, AI300358, AI026031, AW136587, N48589, AI333491, AI217438, AA872204, AA313681, BG149853, AA761900, AA825668, N62189, AI742355, AI167192, AA782249, AI472224, AI027048, AA969624, AW957912, AW505197, AA907863, AW576584, AA279718, AA489085, AI356298, AA496950, AA490549, R81199, AI915658, AW500237, AW242542, BF109353, AA489150, H41907, F09870, AU126430, AV726684, BF061082, AI809172,

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HWLMV62	69	874930	1 - 595	15 - 609	AI718277, AI806204, AI922705, AA134958, AW189584, BE940626, AW152541, BF436606, AW589567, AW779876, AA911194, AA099689, H26598, AI523349, AI783469, C06405, AW979187, AA856931, AW050657, AW580584, AA650629, AA075317, AW993789, AI535926, AF095844, AC007750, and I50896.
H2MAC06	70	874931	1 - 946	15 - 960	AA837575, AI750047, AI762213, AW778875, AA528093, BF594424, AW517424, AW612993, AI749649, AA514773, AA514789, AA421943, AA167440, AI708618, AA400973, AV740396, AI474120, AA514874, AI283967, AV738755, AW845024, AA587027, AV738776, AA167783, AV738660, AA642930, BF879539, AA878029, AW193324, AA857522, AI284506, AA164459, AA164458, AV741975, AW583341, AA838234, AA169874, AV739857, W38398, AW276087, AW264913, AA148194, AA308126, AA169614, AI669077, AA074902, AA148193, AW583781, BF893727, AA079651, BF802476, AW190644, AI306666, AV735674, AV735675, AA167439, AA857853, AA074845, AI199258, AA535642, AI826800, AA166792, AA074727, BF893886, AA421944, AA165663, AA075896, AW751341, BF875085, BF765758, AW265060, AW845005, AA076140, AV739168, BF879359, AW591737, BF748440, BF898643, AI626104, AA076188, AI541032, AA837890, N27757, AA102361, BF903121, AV741814, AA165649, AA100735, BF895363, BF892331, AA524360, AI833071, BF748145, AV741817, AA079557, AA593897, AI680515, AA573267, AA401137, AI675895, AA506601, BE696957, BF893703, AV743848, AW272215, BF354583, AA076566, BE004062, BE183618, AV740205, AA837854, BF334915, AA515574, N79823, BF894855, AA169569, AW364597, U47734, AA173827, BF094310, AW664712, BE184103, BE171567, BF354577, BF805800, BG057623, AW150580, BF918052, BE811764, AA299459, BF893822, AA298668, AI810491, BF893729, BE140374, AA076565, BF894873, AI940001, AW062899, BE004010, BF801920, AW062852, AW062884, AW475086, AA366738, BE171661, BF893097, AI797418, AV737676, BE645920, AA298242, BE183717, AI939989, AW352267, BF893885, BE716617, BE859013, AA503624, BF893856, BF894876, AW062699, AI559933, AI749194, AI866124, AA172395, BF900257, AI697412, AI473481, AA502597, AA329732, BF896945, AW270590, AW778853, AW969360, BE711057, AW000856, AA471032, AA494293, AI695633,

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HWLRF06	71	875093	1 - 371	15 - 385		AW841682, BF766770, and D63997.
HODDO41	72	875352	1 - 583	15 - 597		H69413, H69440, AL120745, AA830102, BF898213, AW340795, AI457813, AC007546, AF064604, and AF155103.
HCHMQ74	73	875371	1 - 426	15 - 440		AA305616, AW861809, AW001611, AK023741, AC006057, and AK001527.
HT3AI55	74	875682	1 - 1467	15 - 1481		AL523414, BE565623, AW955610, AL523413, AI088910, AW469112, AW043896, AA005100, AA262517, AI470354, W78980, R89654, AV750391, AA261819, BF447445, AI079770, AA037517, BF834666, BF834676, BF834673, BF834677, BF834554, BF834667, AA328236, BF836570, AI584124, BF836573, BF836554, BF836568, BF834674, BF836564, BF836558, H19672, BF748075, BF751207, AI247711, AI217267, AV747710, AK025671, AK000219, AL121782, AB034617, and AL121754.
HMVBD68	75	876052	1 - 1266	15 - 1280		BE885169, AW970061, BF439457, AW575699, AW468388, BG116413, BG170032, AW083378, AA057509, AI679190, AV727466, AA574451, AA599718, AA054285, AA706513, AI707934, AW023524, BE142955, R66161, AA199863, AA862725, R84843, BF247952, R85715, AW973101, AW975244, AW979090, H86142, AW975971, AW627831, AL038837, H86028, AW979076, AL039074, AW975143, AW971975, AW975166, AL039564, AL039108, AW972154, AL039156, AW979228, AL039085, AW969930, AL039659, AW979176, AW975941, AL039625, AL039648, AL039678, AW973762, AL039150, AW975022, AW971953, AA059178, AL037051, AL036725, AW975626, AL039629, AW971954, H00069, AW974379, AL039109, AW973821, AW975981, AW972296, AL038531, AL039128, AW969748, AW970540, AW970969, AW979212, AW979147, AW976024, AW971968, AW969885, AW973789, AL040992, AL045337, AL037726, AW970587, AW975434, AW975650, AL042909, AL039423, AW979204, AW973772, AW975596, AW969694, AW971326, AA013394, AW971403, AW968147, AW972440, AL039410, AW970942, AW969798, AL134524, AL039538, AW973254, AW979037, AL044530, AL045353, AL036973, AW968338, AW975058, AW973812, AL044407, AW971404,

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HOCTA74	76	876487	1 - 671	15 - 685	AI302800, BF109314, AW118693, AI808667, AI065036, AW080952, AA862461, AI201847, AI138543, AI015998, AA865819, AA470462, AA454546, AI221895, AA481881, AI039771, AA535254, AA482063, AI301489, AA551867, AI018725, AL121442, AI244932, T88913, AI914566, AI017732, AI016693, AI833052, AA608575, AA120921, AA120922, AU149626, AV720099, AW510983, N57711, BE302246, AW151576, AI572464, BE328214, AI471156, BF769730, AW473129, R85699, H60433, AA890675, AI262997, AA620388, AV719431, T47276, AA534566, AI625454, AA852619, AA889211, AW631306, AA707578, AI718799, T47275, AI124998, AA477467, H88225, AA680222, H66348, N63309, AA131070, AA131015, AW627418, AI474581, AI561334, BE936086, AV733805, BE936002, BF092360, AW861944, AW804686, AW604723, AW392670, BE695785, AW877209, Z99396, AW372827, BF868697, BE705905, AW858526, AW858525, BE705903, BE705906, BF868687, AW577135, AW384394, AW861889, AW858455, AW861954, BF868684, AW363220, AL119497, AL134528, AL119443, U46341, AW604726, AL119457, AL119319, AL119363, AL119341, AL119496, AL119324, BE705904, AL119355, AL119483, AL119484, AL119391, AL042965, AL119335, U46350, AL134920, AL119522, AL119396, U46351, U46349, AL119418, U46347, AL119444, U46346, AL037205, BF868696, AL134902, AW979212, AL042614, AW971745, AW975037, AL119439, AL042975, AW969885, AW979204, AL119399, AL042551, AW971387, AW973770, AL119401, U46345, AW973185, AL134518, AL134524, AL043029, AI142132, AL136526, S79219, X14608, M22631, M26121, AL122056, A81671, AR066494, AR060234, AJ279014, AX046357, AR054110, AB026436, AJ251859, AX030435, and AR069079.
HISET05	77	876686	1 - 912	15 - 926	AI392987, AW204721, AI380500, AI887979, AW166458, AI935193, AI739272, AI393078, AI337398, BE908889, AI262967, AA621187, AW780031, BF002042, AI002949, AA622165, AI078264, AA080959, AW370639, BF001449, BF982414, AA082985, BF001683, AI857378,

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HCRQM22	78	876696	1 - 433	15 - 447	BE544606, BF529981, BE786721, BE251508, BE258319, AW794597, BE255394, BE890405, AL525853, BF757575, AW403014, AI904490, BE747560, BE535798, BE546101, BG028773, BG023780, AI831848, AA115313, AI761315, BE885000, BF808237, BE537206, BE535666, BE535661, BE389956, BE540274, L16783, U74613, U83113, AR030545, A79030, U74612, and AC005841.
HLHTC92	79	877310	1 - 839	15 - 853	R66025, R76969, AW043721, BF109415, AU122689, BF589412, AA553904, AW973590, BE182756, AI417134, R58054, U77970, AR059959, U51625, U77969, and AR059960.
H2CAA49	80	879484	1 - 2296	15 - 2310	AL518281, AI279876, AU123950, AL517520, BE738492, AU122239, AI539769, BE614356, AU127471, AU137119, BE782437, BF032266, AW954410, BF917448, BG114466, BG025422, BG258893, BF793578, BF695505, AA876127, BE535422, AI963800, AA206425, AI969470, AU123404, AL517519, BE884471, BF210187, BF978343, BG258084, BE044090, AU129257, BE079257, AU150519, BG035397, BF696016, AI951966, AW605343, AA459503, AW609270, AV726771, BF576773, BF910792, AW582085, AU152326, AA778294, AW582079, BE546929, BE565375, BG171787, BF939707, AA639198, AU153689, AW609318, BF375096, AA446426, BF094456, AU149119, AI334209, BF081392, BF978405, AU124260, AU119230, BF375101, AW582064, AW813451, AU150709, BF375184, AU159355, BF977470, AW813456, AU152457, AU151017, AU151416, AI150191, BF213914, AU158145, BF573572, AW609320, AI281280, AW149760, BF375091, BF819052, AA446118, AA459274, AA236997, AW609271, AI587101, BF212914, BF243356, AW609290, AW609276, AW662423, AA946837, AI922323, AI198839, AW813453, BE960873, AA568602, AA777025, BF380050, AW376909, BE910222, BF375112, AW582063, AI127770, AW582101, AI139373, AW813471, AW972374, AW609285, BF375104, AU152034, AI753243, AA789258, N95643, AI754062, AW582102, AU150043, AA236574, AI140786, AU145626, AW813461, C75603, AA075484, BE395097, AA251521, BF970745, BE090595, AA587266, BG121171, BE042577, AW609317, AU148699, AW439362, BE546818, BF375089, AL121103, AU154945, AA213367, AW609263, BF375081, AW609294, AA837311, AU123797, AW582067, BF932351, AU156384, AW609291, AI187231, AA227539, BF132102, AI344110, H67810, BF375080, AV723252, BE782617, AA075621, BE834271, AW609293, W95535, AI400951, T65536, AW609280, AA872668, AI192986, AW571539, AU134775, C17463, BE566077, AW970128, AI859211, AA470471, AW609423, BE871406, T17222, AW192135, AA506763, BF248125, AW139044, AI913866, AA192466, AA165156, AI826398, AA678954, AI271344, BE090601, AA113939, C05669, AA137249, H17790, F11801, BF825064, AA164768, C75565, R89384, T16445, T69722, N66040, C18698, H59003, AA503343, AU123857, AA339152, AI025443, D81644, AW582082, R78076, BF222253, H58956, BF818865, D60375, BE094097, F06655,

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HETKQ94	81	880545	1 - 2418	15 - 2432	BF205433, BG025867, BF206942, BE867291, AI814360, AW665404, AW247024, AA971547, AW250225, BF701516, AA781889, AI932216, BE858661, AI144206, AI146546, AA436490, AI494424, AI951048, AI123552, BF185575, AA436445, N25312, BF092058, BE465537, BF931581, AI286226, AI005130, BE719412, BF336730, AF121170, BE931962, T20250, AA464700, AA463999, AW814610, R61444, AI911401, R11114, AA515534, AI680399, BF436747, T20249, BF821425, AI382750, AI580715, AW440012, AI569246, BE645712, AL043113, BF876211, BF846186, T91232, AI240523, BF247639, T86015, N71736, AA770594, AI350837, AI908616, BF820057, AI610364, BF435992, R61399, AI394618, N39715, AA996341, BE173985, AI224483, AA215637, AK025530, and AK025445.
HOFMO23	82	882466	1 - 730	15 - 744	AL525975, AL525520, BE263255, BE144775, BG163687, AA340612, AA375347, AA375265, BE880915, BE880848, AF089745, and AC083863.
HNTNP58	83	882787	1 - 2826	15 - 2840	AI829734, AI073471, AA884114, BF983127, AA507637, H59240, AI263494, AI288403, AL121978, Z93023, AC010677, AL035070, Z82190, AC005154, AC003101, AC004883, AP001697, AC004584, Z94721, AC025593, AC005030, AL121601, AP000010, AP001432, AL163303, AP000151, AC007842, AC006483, AC008050, AC007226, L78810, AC006203, AP001728, AL031281, AC016526, AC005011, AL121777, AC005696, AC002073, AC011894, AL049758, AC004967, AC007731, AC005500, AC008155, AC007685, AC005730, AC018637, AC004983, AL121585, AC002404, AL035455, AP002026, AC007050, AL163201, AC005520, and AA913363.
HOFNY28	84	888480	1 - 1605	15 - 1619	BG258222, BG117025, BG168645, BG253641, BG168646, BG167818, BG025417, BG164284, BE612896, BG252223, BE910738, BF345060, BE621811, BE621893, BF984267, BF798053, BG123011, BF984992, BG031014, BG117026, BG117030, BE621810, BG168644, BE614378, T29199, AA362689, AA362688, AA362690, BG253645, BE613101, AW968355, AW972092, AW968356, AW972093, AW968729, AW971740, AW972091, AI432644, AL045327, AI623302, AL134524, AI432653, AW969229, AI432654, AW081103, AI431328, AW972090, AI432677, BE672759, AL044652, AI431230, AW858522, AI431353, AI431312, AI432655, AI431310, AI432650, AR080280, A49045, I66487, A94048, A94061, AR035224, I66498, AR070554, AX002278, AR071324, I09252, I09251, I07209, I07249, AX042374, AX033488,

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HE8MQ01	85	889128	1 - 2694	15 - 2708	AI866939, AA338997, AA332893, AL079734, BG056174, AI783911, AI114733, AI133552, AI912401, BE048032, AA515728, AV738383, AW963444, AI056177, AA228778, BF312862, AI620585, AA297666, AA535216, AA837035, BF928469, AV656851, BF891210, BF768846, AW798093, AA581247, AA659608, AA847031, AI439910, BF805088, AA452887, AA827771, AA410788, AA310183, BE350261, AW675551, AA714110, AU147162, AI744830, BG250286, H85792, AA651632, AI580250, BE968744, AA513551, AL119921, AI634187, AL038936, BF808097, AW515437, AA728937, AA610433, BF870792, AW338179, AA583394, AW069227, AW303142, AA654778, AA582073, AA527209, BG008041, AA804925, AI457389, AA176972, F11718, AV760723, AA621381, AI733856, AA489806, AV759115, AA464739, AL118925, AC004112, AL161445, Z97196, AL035587, AF116689, AC003093, AC005098, AC004166, AC007371, AC008812, AC004867, AL122058, AC004882, Z97876, AL133320, AC007568, Z95703, AL096840, Z83844, AC004985, U72787, AC004850, AL355386, AL121881, Z85987, AC003007, AC004884, AD000685, AL023575, AC009060, AL445605, AC022436, AC009289, AC007999, AL008723, AC002369, AL033521, AC006578, AL079333, AC003695, AL022315, AC005081, AC002477, AL161731, Z83308, AC004475, AL031177, AC004585, AC083861, AL008627, AL117337, L35676, AC020908, U91323, AF084941, AL162293, Z70280, U82668, AC006271, AC005632, AC007787, AL035495, AC008685, AC005736, AL049548, AC005318, AC002091, AC007030, AC004638, AF039904, AC018663, AL109921, AF129756, AC002554, AL031117, AF030453, AC010271, Z82174, AL138733, U07562, AC073593, AC002468, AL162615, AC016025, AL136173, AL159168, AP002028, AL031683, AC005189, AC005190, AC007435, AL033517, AC006236, AC005050, AC009087, AP000505, AP000295, U95739, AL031727, AC005295, AL035406, AL022163, AC004089, AL353653, AL049758, AC007057, AJ295844, AL137802, AC009480, AC009086, AC005821, AC004520, AC002511, AL035697, AL445220, AL391595, AC007308, AP000044, AP000112, AC004841, AC004755, AP001630, AC008560, AL109613, AC006329, AC003043, AC005225, AC008736, AC011235, AL096800, AL354762, AC006241, AC005102, AC004491, AC011489, AL031447, AC006581, AC009318, AL133387, AL162272, AC010618, AL158040, AL034417, AC011475, AC005781, AL136527, AC005015, AL023577, AC026770, AC005180,

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HE2RG21	86	891139	1 - 832	15 - 846	BF969593, BF976282, BG109289, BF976463, AU125091, AU125476, BE792892, BE792650, AU125886, BE791092, AI133074, BE791337, BF237924, AL135290, BG177271, AV713476, BF797802, BE731259, BE795223, BF968456, BE790661, BE797404, BG171110, BE874660, BE795846, BE794082, BE902740, BF237469, BE562478, AV698481, BG164853, BE795417, BF342550, BE615419, BE798620, AI708767, BE795905, BE798940, BE793434, AU122903, AU123246, BE794023, BF971150, BE729229, BE792297, BE891943, BE796110, BE879535, BF308478, BE615080, BG254834, BE791517, BF689007, AV717421, BE797453, BE378673, BE797539, BG109767, BE790876, BE727304, AV713597, BE274348, BF974511, AV649335, BE879514, BG251837, BE733589, BE731394, BE796376, BE791222, BE907281, BG177300, BE790687, BF970844, BE790875, BE794823, BE795711, AU135821, BE745525, BE300363, BF027468, BG036177, BF308214, BE740779, BE797101, BE790755, BE906835, BE729432, BF314422, BE797254, BE300171, BF663788, BE790654, BE905832, BE791406, BE793973, BG113000, BF207077, BE784397, BG251054, BG025163, BF976215, BG168188, BF973995, BE794572, BE796652, BE796227, BE906382, BF026819, BE873279, BF686061, BF304948, BG165563, BE747673, BE728347, AI818928, BE379082, BE799031, BE879033, AV727362, BE274714, BG121915, BE386257, BE312750, BG107819, BE906182, BE386742, BF308232, BG254508, BE740218, BE792160, BE273381, BE569043, BF688618, BE274774, BE731375, BE889671, BE889607, BE791069, BF969938, BE727488, BF973670, BE744048, BE905712, BE561555, BE795983, BG032341, BF970016, BF980933, BG167418, BE275784, BF034308, BF983251, BE910496, BE560745, AI985637, BF684036, BE733167, BE793690, BE260585, AV688740, BE275014, BF970622, BG253952, BF796209, BE728591, BE276098, BE260683, BF312638, BF310331, BF795019, BE794960, BE729399, BF306538, BG109917, BF664113, BE746075, AW327358, BF026012, BF034507, BE794196, BE619444, BE378927, BG029118, BE890966, AW409953, BE793206, BE795584, BF025737, BE274916, BG178912, BF689288, BF315718, BF309544, BE872571, BE875649, BG178795, BE738312, BF680070, BF685685, BE275143, BE797323, BF206155, BG177739, BG116134, BE746340, BF792526, BE876133, BF970542, BE249941, BE907925, BE796038, BE276137, BF975039, BE867742, BF973384, AF074628, BE796201, BE897798, BE380156, BE560786, BF691285, BF690366, BE727901,

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HE8TE40	89	897862	1 - 1862	15 - 1876	AI823654, AI961177, AI478221, AW968773, AA846576, AI480402, AA584298, BE560551, AI813657, AI760644, AW247012, AA887179, AA868607, BF980116, BE961977, BE550998, AW969507, BE559619, AI651566, AA579655, AV686107, AW969502, BF436325, AW002182, AI654813, AA491041, AI283079, BE617461, AA922926, AW166079, AA917731, BF515827, AW292126, BF223222, AI990156, AI499865, AA729880, AW250215, AI671762, AI680670, AI948722, AA490858, AA503731, AA732307, AW969802, AI222519, AI004530, AA639529, BF798411, W96184, AA513845, AL532268, AI681727, AA768695, BE765188, AI147101, AI205178, AI269686, AW291809, AI393299, AA737590, AA528328, BE065291, AA764868, AI867123, BF095791, BF821814, BF380983, BE151798, BF380986, AV654488, BF909261, BF909264, AW969515, AA809950, AW269244, AW300193, BE693372, AA689267, BF590473, AI694125, BE962424, AW955686, AW954735, AV703593, AV726916, AV661866, AW951516, AI557264, AV696302, AV706064, AV701983, AV707103, AV705545, AV702726, C15737, AV702189, AV725294, AV702148, AV709895, C14208, AV726708, AV655824, AV705217, AW963940, AW950675, AW954772, AK026201, U19181, AC025263, S79539, and A84916.
HNTCH73	90	900546	1 - 1555	15 - 1569	BE877424, BE612406, BE867398, BE873237, BE512843, BF983505, BF984185, BE304524, BE871951, BF983498, BE962323, BG248621, BF984535, BE870587, BE872539, BG108575, BE873272, BG026835, BE868837, BF434094, AW362700, AA777371, AA479141, BE512742, D51188, AA479140, BE740078, BE869477, AA468551, BE304763, AA463224, BG248254, AA576646, BE617281, AI312731, AA584413, AI886718, BF982469, BF928257, BF928454, AA873550, AW753810, BF806796, BE771212, BE771215, AW362728, AA463225, AW362712, BF819079, BF810890, AA730073, T54230, AW602572, AA333903, AA358807, D51376, AW753502, T28171, T54134, AW950374, AW362081, BF926988, AI129853, AW609632, AW378785, AW390826, N86263, AW390848, AW815472, AW379982, AW379983, AW884062, AW815758, BE771216, AW815719, AW264254, D11692, AW378783, AI748892, BE868305, AI034316, AW191034, AI219728, AW148594, AW389490, F04809, BF768876, AR031483, I08631, I78457, AR075479, D30751, I11746, AR075485, U43842, AF042497, AF136233, Z22607, X56848, S65032, E04737, L47480, D14814, E03671, AJ005076, AF058764, X64538, D49972, U90122, U82231, AF056336, AR009509, AR048315, AR075484, and A91867.
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HDPIE44	92	904763	1 - 4006	15 - 4020	AL528314, AU130887, BE780963, BF966718, AL118570, BE739397, AU126476, AU139315, BF512830, BG115027, AI908306, BE880693, BF540985, BF791388, AU122664, BF035925, BF665031, AI672418, BF206660, BE738855, BG120429, BF129883, BF057158, AW959181, AV724420, BF106186, BF966523, BF213412, AL042137, BF211302, AI042351, BF206917, BF031857, BF515714, BF131974, BE514139, AV696443, BF037314, AW130577, BF129874, AA424461, AV661523, AW130565, AU127429, BF677116, AA902916, AU150429, AI239435, BF665735, BE155330, AV705068, BF212900, AA983275, AV710135, BF432386, BF211687, AA461260, BF057834, AA312396, AI627321, AI160503, N63373, BE502195, AV751301, BF184200, AI884925, BE559625, BE468064, AA186321, AV750990, AA749086, BF513143, AU152756, AA402517, N26419, AW025721, AI418879, BE268734, AA088855, AI042350, AA678020, AU150014, BF184441, AA113363, AI761107, AI457727, AW341372, BE674349, BE270920, AA888970, AA580858, AA649198, AV649723, AA100701, H24854, BE836719, AI819134, AA199866, AW025691, BG010680, R77878, BE087003, AA326555, BE550985, AA188173, AA424417, AI640581, H05951, AL044709, BF930036, BF792719, N41679, N56631, BF923482, AW779309, AI218982, H45855, AV751002, BE089649, C17343, R81295,

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HHSAX10	93	904783	1 - 2530	15 - 2544	AL536179, AL533946, AL533947, AL537797, BE613134, AI401562, BF343559, AV746302, AW961160, AI928515, BF966793, AV723437, BF526420, BF725404, BF035547, BF034426, AW753303, AV751398, BF940225, AL037012, AV722341, AW291377, BF340849, BG167789, AA446330, AV745305, AI942480, AI332363, AA443173, AV746253, BE326680, AI924756, AI989804, AI089825, AI423344, BF343626, AW264140, AV745498, AI655012, AV745371, AI418141, AV745442, BE783669, AI831023, AI815927, AV745783, AV746250, AI598128, AI685430, AV746136, AA293039, AV746047, AA131952, AV745494, AA446510, AV724999, AI050790, N51854, BE612567, BF530507, N62627, AA131865, AA781772, M62252, BE244781, AI816187, AW162757, AI167936, AV745512, AV726539, AI003401, AA307598, AA349403, AI143672, AW161966, AA148523, BF529438, AI625601, AI445688, AW900480, AI124706, AL037633, AA293431, AV746086, AL534788, AV745509, AA457374, AA148774, AW051680, AW892804, H08939, AI262177, AW296899, AA604202, AA719581, T15711, AV745470, N78398, Z44301, H89097, H08855, AV708127, H83746, AV745322, BF530020, AW090772, AI880020, AA463482, N45508, AA351563, BE514717, D58472, AV746088, T33816, R26136, AA781761, Z40260, AA912327, AL135377, AV701257, N71208, AA018269, AV732497, AW291641, AL138265, BG056993, H88534, BE858449, BF913258, BE244558, AV746063, AW976010, AA224525, N22006, AI273124, W28157, BE908602, AA019115, AA349402, H80006, T32057, BE796439, BE273856, AV745883, AA526787, AW406447, AA984620, AA577127, H55993, AV696428, AU145083, AU147226, AV684596, AU158906, AL537887, N45466, AV691908, AV762220, AI038990, AL040921, F05944, AW600804, BG034591, AA601355, AL036052, AW079809, AW055226, AW962035,

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HP1AX83	94	906066	1 - 3605	15 - 3619	BG170880, BE927964, AW954276, BE927869, BE927822, AW386244, BE927879, BE927863, AW750978, AI630917, BE927870, BF724110, BE927940, BE927963, BE927825, BE927858,

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HOFNG28	95	908746	1 - 1612	15 - 1626		
HOFOB27	96	911947	1 - 1919	15 - 1933		AW961869, BE077141, AW578424, BG255499, BF954315, AI261629, BE077135, AI148063, N36589, AI261572, BF802132, AW937843, AA426509, BF773463, AA432239, AA297161, AI149643, F12840, AW085552, AI261573, AW964755, AA086106, T74733, AU117446, BF155382, AA190566, AI800802, AV721960, AW863367, AW444435, R05875, AA252523, AW964780, AW959892, AI016747, T08225, BF195133, R10564, BG112973, AA312028, AI149199, AI370265, AI299757, BF514106, AI951761, BF765034, BF961480, BF745812, AA339807, BF961798, BF830434, AW381253, AA297204, AA193676, AI361910, AI565510, AI863790, AA252555, AI279364, AI379019, AI300980, AI431499, AI815225, AI364355, AI024659, AI494214, AI802120, AI351937, AI858581, AI864392, BE671413, AW075432, N55650, AW117663, BG057105, AA041199, R10154, AA227453, AA427655, AA424370, AA243514, AI610249, AA041436, AY008763, AL050283, AY008764, AF194031, AK000923, and AF175325.
HHBHJ45	97	913831	1 - 1633	15 - 1647		BG169391, AW949561, AI310200, BF339286, AI302098, AI654459, BE729449, BE536951, AW968438, BE389695, BF665529, BE277374, AA625808, AA427852, AU154551, AA458825, AU151326, AA428109, AL120902, BF571546, BF222142, AA612971, AU130187, AU126787, AI347584, AI086482, N30370, AU157337, AI271968, W76546, AI688046, W74351, AA807857, BF678409, N95347, H18070, N79725, BF209686, AI347617, AI583445, H09608, AA804327, AA838452, H09609, AA164432, T09029, AW572063, BF337241, AA164431, W76465, BF810348, AI654258, F09074, AA192488, F11408, W72228, W25256, AV686355, AV685242, AW591780, AV698667, AV693138, AV694239, AV684641, AV697086, AA527521, AV693125, AV683176, AV695358, AV685230, AV695077, AA873514, AV684289, AV698337, AV698238, F08059, AW301970, AV691629, T09028, AI308013, AI254516, AI345333, AW301841, AI318573, AW274307, AW302778, AI343199, F04295, AV684299, AW603555, BE778359, AA132390, N62777, T16599, N47046, AW768945, AA459016, AA070813, BF799492, AA133507, AA887062, AA581050, N59845, BE181676, AA873503, AV711509, AL513597, AW301409, BG179993, AL513907, BG104782,

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HHPDV90	98	914163	1 - 1886	15 - 1886	AI811005, AI653359, AI743036, AI568555, AV697280, AA625521, BE048864, BG167806, AI824027, AA401229, BF448652, BF438214, N40011, AA193304, AI130747, AI936637, AI368011, AI080358, AA404268, AW236922, AI275538, AA564363, AI276027, AI624113, AI379074, AI126543, AI275570, AI368003, AA962422, AI191276, AI635306, AI480304, AI492368, W45197, AI333916, W38715, AV702601, AA443016, AI934349, AW960595, AI291511, AA731161, AA488954, AI274931, AA488874, AI582669, AW469885, AA071470, BE079773, AI581645, W38762, AW594009, AI696471, AI383502, N92570, BE646049, AA625343, AI480410, AA613349, AA824555, AI693424, AI096708, AV684337, N27277, AA861317, AA463456, AI796055, AI041748, BE896736, AA335410, AI523346, AI933211, AA194258, AW571434, AI224569, AI868719, AA451885, AA135295, AV683399, C16240, AA360398, AA257150, BF367469, AW250238, BF515389, AW875802, AA135165, BF927607, AI868703, BE178966, N34385, N42846, AA419446, AA736543, AA584194, AI085242, AA745092, AW613813, BF801143, AC002364, AL353937, AX048063, AF217518, AC008155, AC025593, AC006241, AL049776, AL163194, AC008521, AL109976, AC027319, AF196779, AF265340, AL121926, AC020913, AC010618, AC004999, AC011508, AL356652, AL109825, AC005231, AP001753, Z93784, AC018758, AC002126, AC006160, AL049547, AC004991, AC009247, U89337, U91323, AC008745, AC011455, AC008482, AL450226, AC016554, AC020663, and AA825569.
HWMMQ47	99	915068	1 - 1914	15 - 1928	AU117578, BE747272, BE740691, BF975570, BE791051, BF982819, BF568722, BF663926, BE779854, BE258824, AL534023, AL534024, BF967781, BE253195, BE888979, BE778582, BE252033, BG036978, AV751824, BE883871, BF683473, BE263408, BF307358, BE868436, BE392981, AI804750, BF973051, AU144804, BE298007, BE779716, AU145608, BG000903, BF971699, AI146343, AW027129, AI813831, BE395342, AU144372, BF237544, AI690884, BE786397, AI090031, AA478533, AW268818, BF237818, BE857063, BE296783, AL531481, AW327927, AI378303, BF894721, AA594858, BE256127, AU159188, AA147836, BG054746,

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HBGNY08	100	915214	1 - 416	15 - 430	BE880116, AI052526, BF826007, AW168408, BF828616, BF828602, BF825755, BF337344, AI972366, BE221760, AW291494, AW296202, BE221730, AI659795, AI376244, BE502654, BF061519, AW628280, AW628245, AI250922, AW025770, AI142836, BE881510, BE933447, AI042083, AI621341, AI927233, AI824576, BF125935, AI628284, AI379711, BG114432, AW827289, AW088134, BF813177, AA740450, AW051088, AI589428, BE540578, AI637584, AL515173, AA731026, AV727136, AI633297, AW089006, AV709543, AV726200, AI609375, AI890887, BF812937, AW163834, AW051059, AI432570, AI819202, AW172878, AI537677, BE880341, AI567582, AI474646, BG029829, AW026882, BG251264, AI537643, AA738052, AV681719, AW410259, AW132107, BG178351, AI634682, AI445620, BG257656, AI581139, AI475371, AI421091, AW084056, AI813633, AI934011, AL513823, BE875243, BG029053, AW169001, AI345688, BF997967, BG122594, AW020397, AA732156, AI289791, AI679550, AI250627, AI801325, AI445256, AA088789, AL514267, AV681859, AI680453, AI583578, AL048323, AI698391, BF913616, AL048340, AI625701, AV682450, AW152587, AI249877, AI366922, BE895765, AW081383, BE965330, AI401697, AI687728, AI540674, AI561356, AW162194, AV682366, AW157183, AW827206, AI587606, AI263584, AI936003, F26535, BE963310, BG113299, AI273142, AI536574, AL514455, AI433611, AI458588, AW025279, BG164117, AI826415, AI440238, BF343521, AI890412, AW983832, BF924856, AI471429, BG256592, BE880182, BG117653, BG163353, BE791620, BE536058, BG032036, BE061378, BE877769, AW080746, AW834282, AI799540, BF032910, BF911528, BF822127, AI476076, AL513947, BE874133, AW673679, AI310332, BG122101, BE889355, AW192461, AW074605, AI866820, AL042382, BE965455, AW983829, AL040241, AI800473, BE544111,

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HODGH45	101	917394	1 - 929	15 - 943		AW275585, AA489939, AA480561, BF887136, AI285651, BE161469, AW057760, AA648942, AW072963, AI086603, AW630599, BE677227, AL138119, AA280886, R22196, AI038990, AI935827, AI446424, AI754064, AW500532, AA731859, AW855729, AA360082, AI174703, BF792103, AW275640, AI952885, AA425283, AW080062, AW935456, BE967607, BF748493, AA584360, AA330435, AI869406, AV683406, BG231195, AW802912, AI300608, AI183727, BF812696, AA548811, AA489390, BG230829, AW342042, AW963785, AA086391, AW975247, H66812, BE171849, AA345665, BE154761, AA016062, AA370761, AI823395, R43468, AW850089, BF530611, AV695910, BE974200, BF698734, AI623505, AI271693, BF933309, AA551580, AA826079, AU151751, AA018175, AV704185, AW169183, AI028148, AI275989, BF770872, AL043285, AW964164, AA021421, AA640305, AI433262, AW750527, H86246, BF958025, BE154704, AL048969, BF346854, AI274462, BE744372, AL049553, X94359, AC005535, AB032485, AF229986, AB000931, AC004922, AC009362, AL109806, AL158815, AC004835, AC006132, AL035460, S45332, AC002985, AC005000, AC008102, Z92844, AC006166, AL136321, Z79488, AF217403, AF124730, U58047, X69907, AC005251, AL157372, AL008726, AC002477, AC004996, AC002039, AC006115, AP000049, AP000311, AP001718, AL121917, AL080245, AF003626, AC005049, Z98742, AC004000, AC003969, AL162458, AC018663, AC009487, AB023051, AC004643, AC005846, AC005179, AC004650, AJ003147, AC006576, AL136307, AC020934, AC000115, AC010205, AC004811, AC004913, AL160053, AC008403, AF243527, AL353807, AL009181, AL031311, AB040900, AC007249, AL035659, AC009484, AL163249, AL031390, AL133163, AF045555, X84066, AC006317, AC007021, AF060911, AC068499, AL079341, AC020904, AK023361, AP000512, AK026899, AK000252, AC005224, M94634, Z48051, AB004907, AC005944, AC006162, AL050328, AC012442, AL353777, AC006474, AC003688, AC005057, AL034420, AC004148, AP001068, AL445196, AC006137, AC007845, AC004477, AL121653, AL133545, AL139327, U91326, AC006011, AC005154, AL035404, AC011465, AC007879, AC009311, AC005519, AC006376, AC016025, AL137818, AF196779, AC005701, AC008038, AL109804, AC005228, AC004797, AC005409, AC005326, AC004965, AP000221, AL138836, AL353811, Z85995, AC022432, AC073323, U73648, Z99128, AL121890, AC006075, AL139383, AC006121, AC009123, AC006249, AL034380, AL137795, AC004659, Z97206, AL121751, AL031847, AC015550, AC002037, Z69890, Z68287, AC005335, AC004225, AC011491, AC008626, AL118520, AC005962, AC025472, AL133551, AC003101, AC009032, AC005779, AC006388, AC005003, AL008636, Z95116, AC004883, AC004585, AC006455, AL031427, AC007114, AC005098, AC005859, AC005037, AL031280, AC002110, AC000405, AC005546, AC002104, Z99291,

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HWLKE58	102	917716	1 - 2567	15 - 2581	AW957184, AL520230, AL135399, AL515934, BE618778, BF056891, AL520231, BF966712, AI633878, AW515316, BG032703, BG027920, BE042542, AW088411, BE883723, AL518067, BE218306, BE644805, BF087512, BG054496, AW207435, AW771521, AA902264, AW083012, AI818209, AW105148, AI669659, AW514659, AA126445, BF516057, BE465947, AU152940, AI927938, BF031562, AA310489, AW410334, AW182807, BE465917, BE763696, N21466, AA767314, AI420205, AA054496, AA938728, AI493810, AW771502, AI743602, AW675411, AI090291, AI283114, D81907, AI417561, AA427677, N66098, AA043792, AA573278, AA427532, AA431514, AI752320, AI819645, W19853, AA186486, BG003474, W00707, AI278309, BE349516, AA292620, AI366801, AA058340, AW512566, AA349431, AA973972, AI434568, AA349432, BE221654, BF104164, N62707, AI631297, AA766576, AA345941, AA588743, AW189042, AA724174, AW089555, BF432696, AA187281, AI638738, AI678159, N98699, AI440413, AI917203, C02522, AA829470, AA431188, AI332895, AA653570, C00128, BF998349, AI702887, T40865, AA970774, D79887, AI753861, AA766639, AI752319, D78858, AA809488, AA360504, AI962149, AI440138, AA456027, BF352331, T39804, D62361, AW149169, AW089455, T39783, BE618245, AA328062, AI220712, AI925346, H83314, AI668846, T40872, D78824, AI932606, R77568, BE782129, AI587187, N90043, D61745, N78427, AA300827, AA174177, AA350598, AA043666, R61473, BF089446, AW514435, AA126569, BF089445, BE536123, AA329088, AW796219, AW796258, AA455387, AA292619, AA096434, BF570490, AI624981, AI749472, BF837084, BF838288, AW275782, AW275777, AA704575, AW089135, BE940131, BE163882, BE163878, BF090691, AA348799, AK023143, T39879, and T39889.
HRADL40	103	919433	1 - 1047	15 - 1061	AL523954, AI057097, BE737274, AI740479, BF972939, BE792858, AI797405, BE250379, BE409256, AI418377, BE513939, BG032129, BE734267, BG167040, AI814639, AI817600, AI743696, AW268351, BE563371, AI889412, BF970634, AI623409, BE409777, BE268371, AW612995, BE250540, AW105242, BE464854, AW117856, AW272529, AI745423, BG059988, AI520744, BE407785, AI802882, AW951521, AU151633, AA988074, AA587623, AI864929, AI091730, AI766700, BE299112, BG165794, BE785114, AI382349, AI827080, AI056586, BE387632, AW083461, AI168189, AU129529, AW188543, AI962116, BE789666, AI880229, AI868331, AI338997, AA157276, AW002329, AA258412, AI364317, AW204445, AW197889, AA449331, BF826010, AI564865, AA775328, AW196304, R84307, AA988067, AW473206, AW249890, AA858029, AI480058, AA157315, BG036425, AA192986, BE940591, AA302199, BF109749, AI261917, H08847, T29752, AI742031, AV744823, AW197790, AW197780, AA364515, AA157347, BE205948, AI193424, AA405800, AW243173, AA135269, AA135188, AW250551, AA846661, AA192649, AI760066, AA601382, BF797658, AL036368, AA157251, Z25820, L24774, Z25823, Z25824, Z25821, AC007162, AC005212, Z25822, and U80735.

HOFMP73	104	919895	1 - 2026	15 - 2040	AL534904, AL532610, AL516508, AL518341, AL537853, AL535425, AL536043, BE779892, BE742082, BF342824, BF689584, BE728130, BG036052, BE616486, BE908269, BE263125, BF342337, BE901909, BE744162, AW239327, BE744723, BF314677, BE740545, BE312905, AI909673, BE892672, BF038574, BE741530, BE737150, BF312905, BE616822, BF032371, AW966195, AV683435, BG119309, BF037944, BF314356, BE735054, BE747683, BE907163, BE735491, BF311641, BE260982, BE271649, BE743218, BE736799, BE261948, BE279316, BE313251, BE742646, BE272420, BE336884, BF690789, BE871599, BF689557, BG260726, BE612361, BE737259, BG113153, BE892856, BE281294, AV706514, BF315657, BE898510, BF689643, BF316842, BE261398, BG036139, BF725733, BE939964, BE313385, BE260757, BF525729, BE788732, BE622344, BE742327, BF724840, BE386718, AA037208, AW996326, BE741341, AW160971, BF351816, BF930665, BF976960, BG117567, AV653871, BF984362, BF317414, AW393167, BF691819, BE168310, BG035435, BG252355, BF571880, AA179450, BG119955, AA428750, BE256703, AW390219, BE179920, R91114, AV728232, AI907139, BF087769, AW804565, AI142132, AV647759, AI142136, BF755012, AV723986, AF062716, R52199, AV646258, BE785514, BE260283, AW838307, BE908603, BE174669, BG118190, AV696733, AA082368, BE174445, AA372215, AA337535, AW368737, AV725049, AV658276, AW948691, AW368840, AW948696, BF037070, AV733360, BG121951, BE698728, AA788902, AA559314, BE259919, AA385829, BF341835, BG118704, AA337949, AA360462, AW948698, BF930434, BF923596, AA376841, BE172795, AV692780, AA362386, BE173127, BF913320, AW068069, BF692127, AW068800, BF803377, T71996, BE173259, AA305777, AW948694, AV708415, W32145, AV709872, BE167028, AW385218, BF081248, AA337859, BF351796, BF844572, AW947386, AA339979, AA379722, AA853192, BF830253, BF907280, BE172880, AA336721, BF032429, BE839327, BE772910, BE772907, BE839310, BE841076, AA337414, AA361134, BE772895, BE839302, BE772893, BE772902, AW450427, BE841048, BE839324, BE772901, AA307018, AA357376, AA360603, BF830142, AV734812, BE170712, BF761106, BE839315, AV648046, BF229791, L16510, M14221, AF285442, AX013195, M13230, Y18460, L22569, L04859, AJ010277, AF044323, AF078844, Z97214, AR050959, X75295, AL137711, AF274348, AF274347, AB052191, AF118094, S82852, AL353940, AB048913, AL133084, AB047947, S83440, X93328, AF032666, U92992, AR068466, AF171061, AF013214, X66871, AF159148, AL050172, AB050431, AK027116, X62580, E12580, I09499, AB051158, AL389935, AL121952, X98066, AK026885, AL137459, AF126488, AK024747, AF090901, AL136984, AK026642, AF116609, S73498, AL080148, AK025350, I17544, AK000250, AR038854, U62807, A08912, AL355719, U95114, X06146, A08911, AL133665, U89906, AK024594, AB048919, AK025632, AK025658, AK026570, AF139986, AL110222, E02221, AL096728, AL161802, AF130104, AF116691, AF119336, X66862, AF098484, AF218006, AL389947, S76508, U72621, AR064250, U96074, AL137461, AF007142, E12806, E01812, AF113222, AF195092, U42766, J05277, X72889, AB020592,

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HOFMS02	105	920253	1 - 374	15 - 388	AA076264, AA085092, AA080989, AA063334, AA075694, AA084890, AA069099, AA084855, AA084814, AA078759, AA083056, AA083017, AA074846, AA070575, AA069969, AA082755, AA075614, AA075818, AA100017, AA070377, AA070995, AA065075, AA113255, AA070965, AA070321, AA075784, AA075592, AA085065, AA134716, AF093677, L07095, V00711, AB042523, AB042524, AB042809, AB042432, AB049357, L07096, and I62858.
HUVHD12	106	921707	1 - 2708	15 - 2722	BE729461, BF795181, BG108619, BF309103, BE733125, BF027564, BF309068, BE296065, BE281099, BE298511, AW410246, AW409779, BF526623, BF308487, BE298767, AW271999, BE299141, BE298938, AW070334, BF309208, AI810901, BE221973, AI693910, AA029642, AI435095, BE388330, AI765687, AW510727, AW470549, AI862580, AI394548, AI972685, BF589734, N98473, BE223075, BF475345, BF434507, BG059921, AI809960, AI762024, BE779192, AW073339, BF221682, BE856254, BE044436, AW410326, AI763319, AA029710, BE302520, BE465271, AI701495, AI017268, AI799592, AI401766, AI392786, BF308873, BE270326, AW131646, BE390072, AW593466, AI371702, AI638231, AI655706, BF939266, AI369175, AW409726, AI204980, BF308645, BE859057, BF593536, BE205950, AW663740, AI360022, AI278134, AA632035, AA039563, BF056862, AI570638, AI204500, AI362875, BE294172, AI340928, AW294855, AI424041, BF196199, AW237311, AI459219, AI766885, AW016416, AI203132, AA504431, BE551227, AA447758, BF111136, AI910708, N57532, AI767238, AI421493, BG231658, BF740107, W56299, AA279292, W55871, AA845967, AI340930, W76092, AI870442, N49400, N66084, AI051272, R49397, AA834166, N92406, W61301, AA977863, AA279270, AA453689, N49489, BE279899, AA039564, N51462, BG054588, R73170, AA911075, BF475817, BF851978, AA769921, AI378019, BF224168, AI928755, AA379570, AW269014, AW592153, AI886020, BE044396, BF852201, T47196, BF852157, T90531, BE081267, AA300798, AA323087, H69590, AI653392, W72845, AA323218, BF054948, BF111142, T83066, W24631, BF924523, BG149504, AI886244, W65365, BE075405, W24197, AI354659, AI419610, T81327, BF917322, N79047, AI880342, AW449928, BE218696, N46989, AI419132, BE219972, BF304931, AA504197, BE299549, AI370420, AI651959, R02389, Z42404, Z38611, AA676675, N53602, AI350904, BF205597,

HMVDQ41	107	922191	1 - 1980	15 - 1994	BE908874, AA403039, AA772356, AA890039, AA706235, AI796685, AW958911, W56103, AA639769, AA707393, AI971384, AI400642, BE349391, AI419056, AA931654, AI074056, AA725449, AW752569, AI278287, AI051080, AA934509, AI056195, AI827412, AA291642, AA252870, AI278795, AI077777, AI344740, AA855074, AA287208, N99681, AA625359, AA707796, AI085793, AA910676, AI375275, AI277706, AA968653, AA482049, AI040845, AA004744, W56146, AA128102, AI038120, AA926651, AI808622, W42934, AI241340, AI419232, AA938251, AA481865, BF939403, N62191, AI350660, AA846421, BE174045, AA928335, AA987944, AA805065, AA325681, AI188852, AI266586, AA401330, AI022609, W37593, AI459456, AA514539, AA480369, AA938533, AA694474, AA694542, AA642598, AI085080, R55037, BF885412, AI719065, AI022981, R36922, AI868718, N94983, AW204000, H62802, AA284488, AA125812, H62716, H41118, AA639530, T49454, T49455, BF772108, AV698354, AW847806, H42251, T36167, AI350924, AA782685, AA252893, AI051453, R10302, AA214099, W86591, N76488, H42250, N59273, BE165692, AA781103, BF985470, AI191721, AA680383, H22403, R10303, N71946, W19456, BE142862, AA977361, H22370, W42869, BF935739, R55145, W37488, BF942272, BF942336, AI309601, R10631, R10632, N76744, AA213991, BF929098, T24749, AA725118, AW753876, R55007, AA090452, BE146939, BF772122, AI247921, AW028468, BF939755, AI084241, BE348377, BF991587, H58310, AW058434, BF947830, BF991716, BF947297, BF991604, BF943751, BF947310, AW839223, BE075398, BF764247, BF846830, AL137496, AF303378, AF300796, I76236, I76219, AC023790, AL117345, AC005373, AC010326, AC006584, AF111168, AC010205, V00589, X57170, AC007182, AC007221, AB019437, X06789, AL133472, J00063, AF193582, AF193580, AF193585, AC007954, AF193581, AF193586, AF193587, X71804, AF193590, AC006449, X83747, X83748, AF193588, AF193591, X71799, X71800, X71797, X71802, AC026704, M10817, AC005409, X83746, X12811, AL109797, AL158824, AF193592, X12622, X16851, X58365, AC004787, AC007131, AB015590, X04309, AL162718, AF099810, AC005284, AL138976, V00647, L49397, X58368, M35175, X04308, K01374, X58367, M74438, X83749, X63147, J01861, M13919, M13920, AL135978, K01537, X63146, X63145, V01426, J01009, AC007955, AJ245808, AJ242468, AL050331, X56635, X56631, X63148, AJ237911, V00648, S73106, X56637, M13375, X56632, AF284748, AB001499, AP000350, AF284747, X56636, K03511, K03510, AB001495, AF250529, AB001492, AB001493, AB001494, AB001498, AB001503, M13921, X05867, AF250528, AB001501, M18680, AL031658, AC006120, and S73107.
HODGI03	108	922879	1 - 216	15 - 230	
HODHD14	109	922955	1 - 734	15 - 748	AI670994, AA457520, AW008614, AA284465, AU147140, AA834633, W91945, BE879668, BE382371, AA179361, BF841870, AI221804, AL034369, AC008468, AC007394, AC006079, AF003528, AC006231, U96409, AL049834, AL132671, AL121875, AL049594, AC005274,

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HODDC03	110	925296	1 - 528	15 - 542	AC009329, and AC020581.
HVCAG04	111	925735	1 - 1594	15 - 1608	AI936826, BE271770, BE385990, AW149665, AW590950, AI990500, BF126050, BF432379, BE392412, BF439382, BE395797, BF125134, AI884686, BE395581, AI742092, BE858216, AW150789, BF939693, BF594242, AI859538, BE378674, BE350014, AI018769, AW338938, BF726459, AI336858, AW075598, AW148557, AI423162, AI363261, AI150931, AI459805, BE395206, AI765236, AW954549, AI391683, AW191974, AI202043, AA173383, AA626797, AW087372, AW075549, R11723, AI937602, AA084249, AA419229, AI566797, AA419214, AA613995, H17965, AV725028, AI499630, AI272281, AA084248, BF054837, BF054680, AA075710, AA075743, AI263480, BG057775, AW771806, AI869176, AA834860, AW128849, AA780222, AA970361, AA574173, R17696, BF935708, AA775244, AA827444, AI969011, AA706146, AA665640, BF726644, AA173739, AI480207, AA496806, H06707, BF508715, AA082074, R14544, AW768971, H17189, AA349894, R43737, AV717094, R41205, AV727120, BF219218, R20352, AA776783, AI767459, AV747689, AI141302, BE386060, AI421975, H06756, AI582720, AI054234, AA582576, BE041936, AI140655, BE746601, BE736301, BF345141, AI299246, BE899287, AI138793, AW014802, BF477409, BF432690, BF125664, AA349893, AI817194, BE827461, AA102212, AA620332, BE858655, BF347279, AA960903, AA994321, AI266676, and AF034633.
HCRCE02	112	925837	1 - 1551	15 - 1565	AW082702, AW182938, N76185, AI760396, AW058256, BF939004, AW890838, BF438133, AI800552, AA996239, AA774721, N39067, AA984011, AI094521, AA456754, AA573698, N95736, N63430, N64772, AA836623, AW890829, T56007, H28396, N48422, H28371, and Z82254.
HHERA91	113	926067	1 - 2542	15 - 2556	AU124593, BF305985, BE793458, AW411525, BE746024, AW411524, BE745264, BF792014, AW845240, BE378421, BE272083, BG036629, BE273980, AV684577, BF340012, BE873767, BF033645, BF984116, BF980548, BF306936, BE780737, BF436316, BF968051, BE392778, AU148420, BE777873, BF970020, BG254594, AV707425, BE898179, BF969458, AA442297, BF307860, BE176556, AI921390, AW083114, AI432643, BE857417, BE908252, AA434090, AW135378, AI907299, AW129697, AI907302, AI559576, BF306438, AW088122, AA577937, BF855709, BG114638, BG005738, AA437232, BF196470, BF850283, BE905441, BF803784, AA558517, AI952737, AW848212, BF810009, BE076517, BF804862, AW020932, AA434362, AA357638, BE272724, BF741455, BF933621, AI834236, AI653899, BF837849, BF964440, AA479851, BG011157, H53665, AI674310, BF741442, BF799562, AA496510, AA853878, BF033991, BG170573, AW292697, BE396149, AA428249, AA477491, AW973725, BF807612, H53626, BF968611, C01952, N41205, AA430740, BG222431, BF765880,

HAGDL82	114	928396	1 - 1864	15 - 1878	AJ277437, AK022597, and AK000530. BF038718, AI052255, AI627552, BF433190, AA890036, AW467145, BF513360, AA679966, BE567783, AA932501, AI655727, N95443, AW613958, H15351, AI308231, AA678372, BE567435, AA861702, AW661963, AW661972, AA844485, AA768243, W69720, W69848, AI025683, N42789, N69505, AI271962, AI953406, AA398963, W24323, AI004883, AA564406, N31480, AW296874, N76230, H11150, AA005413, AA398826, AI770002, AI061173, AI147037, R39153, AW859636, AW859227, Z45949, N54527, AI672289, BF671244, H11062, AA661956, AW970819, R14035, Z41567, AA005414, BF095740, BF095666, BE774830, R01400, AA811935, H15726, AI080087, R01399, AI611688, AA491284, AA582554, AA121777, AI079910, AI569086, AI888441, AI298710, AA468923, AA593471, AA565426, AI733856, AI285696, AI040051, AA332989, AI471691, BF842195, BF337291, AA346586, AW327624, AI160117, AA678436, AA302970, AV763538, AI917132, AA191418, T15897, AL035455, AL049985, AC016831, AC004543, AF017104, AL139182, AF200465, AP000963, AC009294, AF205588, AC074331, AC007386, AL136305, AL122001, AL035451, AC004965, AJ229041, AL109919, AL133238, AP001732, AC007405, AL049696, AP001696, AC020898, AL078462, AP001601, AL117337, AB042031, AL121897, U89335, AL353739, AP000472, AC008534, AP002529, AC006195, AC007390, AC007376, Z97985, AC018897, AC006479, AC009493, AP001683, AC007364, AL117187, AP001698, AC005772, AF015720, AL021939, AL356503, AC020655, AL133355, AL078593, AC064878, AL139395, AP002533, AC007221, AC004804, AL049643, AC007545, AC009223, AL135839, AC002525, AC007388, Z84470, AC009179, AL136084, AL121578, AC005899, AC004385, AC005911, AP001712, AC006197, AL022310, AP001706, AP000518, AL049712, AF107258, AC005066, AC004547, AC005701, AL080317, AL031733, AL163268, AL354872, AL391374, AP001697, AL359704, AL137067, AC007842, AP001669, AL136139, AL160033, AF003529, AL031985, AC007157, Z97181, AC006144, AC069298, AC005326, AP001328, AC007077, AC004655, AL391986, AP001700, AL021528, AC008896, Z70272, AL354720, AC007316, AC007102, AL161804, AL050335, AC007653, AC007528, AP001677, AL133284, AL049588, AL117333, AC009468, AC024162, AL122057, AF188025, AL049759, AC009406, AC083863, AB020868, AL445188, AL136300, AC009470, AC004817, AC011248, AL109828, AC007907, AC004865, AC025765, AL160191, AC069026, AC008842, AL135744, AC004867, AL022717, AL121757, AL138958, AL121583, AL445604, AC010596, AL121919, AC011890, AF027390, AC010363, AC006019, AP000466, AF265340, AC005324, AC007790, AE000660, AC010165, AC007597, AC007563, AL035458, AL022719, AL022165, AC005822, AC002288, AL132718, AP002898, AC011452, AL122002, AL137143, AC008074, AC002086, AC026197, AC002472, AC022013, AL031768, AC019171, AL049709, AL050310, AC002422, AC005071, AL132773, AL109801, AP001672, AC007050, AP000355, AL137851, AC004047, AP001694, AL389983, AL157413, AC008071, AL117338, AC009506, AC027689, AC000003, AL121593, AC004103, AL050307,

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HWBDS34	115	930484	1 - 3044	15 - 3058	AU130359, AU118385, AU130640, AU127870, AU127056, AU128471, AU129803, BE886921, AW188126, BE889704, AU128544, AI114658, AA779297, AI936493, AW188141, AL045312, AI553970, BF002279, BF671616, BF061427, AI139399, AA406422, AW151544, AI150128, AA194584, AW131406, AL047872, AI087327, AI004128, AA887912, BE708344, AI801388, AA010422, AA194501, AI500467, R66419, BE150925, AU117686, H83852, AA973155, H08158, AI910805, H83831, R01915, T75488, AA058677, AA471337, Z41823, AA774580, AA010394, BE041711, T75527, R52813, AI000146, AA214136, AW014661, AI910431, AI798347, R57531, F03794, AA213958, R01963, BE838102, BE707063, BE706963, T86495, R52845, BF110371, AK027051, and D87466.
H6ESA39	116	933568	1 - 1250	15 - 1264	BF033707, BG116039, AI820052, AI399661, BF940969, AW188045, T26603, AI674067, AI091805, AA477591, AA480288, AI218039, AI300906, AW978872, N71816, AI936066, AI245622, AW194052, AA291409, AA639600, AA778322, BG057053, AI334794, BF732599, AI378435, AI201307, AA918657, AW102947, H01857, AA861142, AI352598, AA302632, AA992931, AI360566, AA931399, AA847869, AW967258, AW081519, AI869896, H01858, AI698735, AA403312, AA936581, AA972408, AI025530, AA143416, AA781469, AW341711, AW003441, R46670, AA613528, AA757047, Z92544, and AI391671.
HPCOR06	117	933678	1 - 457	15 - 471	AA455081, AI263465, BF912280, BF912197, BF912198, AC004980, AL109626, AC006031, AC008774, Z83819, AL445590, AE000659, AC026188, AF003529, AL133328, AC023478, and AC034195.
HTFNO06	118	933989	1 - 909	15 - 923	BF684524, BF340318, BG107767, BF681126, AA497123, BE250611, BF673679, AI925369, BE778532, BE250414, AA497045, AI193675, AI125248, AW301040, AA001314, AA063616, BF109644, BF516348, AA039474, AA039475, N91255, AW630056, AW613821, AI991147, AW970517, AI306650, AI128891, AW627576, AW515210, N92376, BF446911, AA781865, AW007579, AA467823, AW630816, AA938705, AA706012, AA467879, AI695530, AA040221, AA831695, AA541653, W73974, AA872459, W72343, AW103804, BE076374, BF331452, AW605476, AA001684, N26202, D31084, AI245152, W19909, BE932204, AI583969, AI672730, AI707545, AA551882, AA578108, AW088337, AA036698, AI365605, BE841269, AA578193, BF931099, AW605475, BG153138, W24618, C02159, W04846, AW975002, AW979204, AW975037, AW976024, AW975942, AW975965, AW971975, AW972845, AW979127, AW972292, AW975032, AW979238, AW975031, AW975628, AW971403, AW976023, AW971404, AW975105, AW969680, AW979208, AW974801, AW975954, AW971968, AW969839, AW972721, AW969885, AW975952, AW974998, AW969791, AW975930, AW974786, AW970942, AW971732, AW975876, AW969673, AW979098, AW973219, AW971375, AW973254, AW979090, AW979106, AW979176,

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HODFY08	119	935520	1 - 456	15 - 470	AA747608, AW975995, AA256200, AI431918, AW886025, BF965611, AI621212, AW867016, AV645418, AI436124, BE048562, AW898294, AW880127, AW880440, BE081675, AW997462, AW880432, AW880266, AW946173, AW880359, BE170427, AW880049, AA228900, AW862989, AW899139, AA558500, AW796080, BE816601, BE010148, AW996482, AA640849, BG057615, AW996413, AW893101, BE816610, BE170365, AW270207, BE000410, AA501690, BE827577, AA721598, AW237896, BE181299, AW237940, AW996346, BE088714, AW795108, AA501719, AA557437, AA910096, AW063981, BE170597, AA503566, AW275631, AA259218, AW996170, BE091646, AW899295, BE082424, BE835169, AW946231, AW996655, AA640998, BE826780, AA713882, BE082418, BE826740, BF332416, BE091167, AW866936, BE082383, AW887658, AW894357, AW946277, AA715611, BG059116, BE089449, BE826743, BE170594, BE826769, AA613748, AA658572, AW880433, AA225819, AW946266, AW238729, BE835200, BE835202, BE082440, BE080195, AW865798, BE079906, BE079912, AW865618, AW880070, BE082419, BE082423, AW880128, BE082437, BE827556, BE816607, AW868862, BF478324, AA226655, AW796081, AA632977, BE168364, AA558278, BE699508, AW894540, BE816614, AA170820, AW884606, AW892161, BE089273, BE816615, BE183896, AW821605, BE007276, BE089602, BE184051, AA650193, BE082421,

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HRACK27	120	935717	1 - 2723	15 - 2737	AI797673, BF222825, AI638276, BE784408, AV684863, BF217945, AV712945, BF185949, BE707564, AI983071, AW300244, BF949779, BE502956, BF674065, AA999982, BF572901, AI379012, AW237408, BF512700, BE671433, BE221745, AI439170, AI634105, AA256584, AI672401, AA904964, AI742625, AI925484, AW129743, N45400, AA570413, R17726, R20014, BF593101, H50174, AI287883, AI478134, AW183869, AA629865, AI984609, AI760492, AA126804, AI979187, AA256541, AA400198, AI287866, BE044058, BF954310, AA353809, AL040798, N32088, R14618, AW087798, AA687346, AI949879, AI262174, AI927259, AI912920, AA262622, BE771761, BF590031, AA935907, AI927253, H50126, BF886641, R44828, BF886649, BF957504, AI370543, AW381072, AA400357, AI193434, AI470872, AI473255, AA856870, AB037795, AL133045, AB050258, and D16989.
HRACW30	121	940639	1 - 1092	15 - 1106	BF976230, BF976543, BF663472, BF976289, AV695127, BF976253, BF663527, BF976434, BF664290, BF975568, BF975451, BF976042, AV703739, BF663671, BF662874, BF975121, AV734840, BF129120, AW575927, BF128686, AW406521, BF664479, BF673606, AW604752, AV651251, AV712126, BF106245, AV683248, AV702504, BF976443, AV682465, AV711839, BF976623, AV696029, AW406562, AV696611, BF663521, AV700457, AV700525, AV696032, AV646747, BF663670, BF663052, AW575963, AV688963, AW950221, BF975235, AW575415, AW575346, BF106080, AV646708, AW575364, AV733319, BF797505, AV733390, BF663197, BF681319, BF663098, BF664317, AW404714, AV686096, AV683109, AA522693, BF526853, AW864112, AW961249, AV651284, BF974584, BF087519, BF663982, BF664384, AW604755, BF663385, AV694333, AW951137, BF340407, BF975821, AI354387, AW406081, BF976602, AW383594, AW379839, AI569037, AW369231, AW406564, BF795850, AW574924, AI921456, BF976146, BF106352, BF976244, AV653568, AV705457, BF976259, BF375248, AW605034, AW380142, AW964425, AV734918, AW576109, BF878285, BE149494, AI432569, AV720327, BF663826, AI694098, BE711071, AI208910, BF881717, AV688287, AI355534, BG107363, BF976425, AW856063, AI254719, BF878299, AV687177, AW582319, BF337917, BF976649, AV698744, BF869617, AW405980, BF883209, BF829419, AW404417, AI990966, BF128841, BF106055, AW383598, BF795261, BF810843, AI250870, AW405817, AV681466, BF870064, AI749799, BF663663, BF105950, BF812159, BE932420, AW383602, BE939490, AI347602, AW383450, BF128587, BF878293, BF976618, AW383597, BF883316, T58152, T89330, BF878296, AW405753, AW793702, AV692938, AV734331, BF829413, AW383454, AV734312, AV690568, AW383452, BF842477, BF664084, BE064617, AW794639, AV682898, AW383536, AV690475, AW383539, AW383625, AW864088, AW382758, AW391263, AW383549, BF829086, BF828085, AW383591, AI933674, AW406495, BF337912,

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HOFOC32	122	941969	1 - 1883	15 - 1897	AL532432, AL532431, AU132058, BE798843, AU139276, AU119208, AU138608, BE779199, AL042862, BE619080, BE619600, AU137132, AU138251, AU139095, BE736021, AU139250, BE736975, BG166907, AV702693, AU135166, BF680307, BF724892, BG032973, BF694955, AU117328, AV699036, AL080042, BF338982, AV699058, AV683938, W02541, BF126282, BE439809, BF377282, BE047356, AA410911, AW374122, AV691776, BF762187, AW957493, AV687261, AW629925, BG252180, BF762186, BF367040, AL535766, AW899940, BF951967, AA053196, W45135, BE831552, N24471, BE545515, AV654362, AA813270, AW892301, BF356093, BF855109, AI459881, AV763974, AA336819, AA373756, T83705, AI669408, R96269, BE246428, N73356, BE677673, BE241862, Z18911, N39900, AA345382, AA090019, BF996474, R17144, H99188, AW615320, BG010667, AA294859, AA089600, H04517, BF376026, BG236821, H23366, BF889430, AW390191, BF061792, BF968205, AL046849, AI613017, BG058208, BF882343, AV727776, BG110684, AW059837, AI249257, BE781369, AL040243, AI633419, AI828731, AW129202, AI284020, AI273142, BF970449, AW196141, AI554484, AI912866, AI702406, AI445165, AI702433, BG164371, BE047952, AI872711, AI568870, AI952360, AW118512, AW131954, AI612920, AI349933, AI690312, AI570384, BF724691, AW071417, AW002342, AI569616, AI475451, AI799199, AW082040, AW169671, BG179993, AI610756, AI866002, AI433976, AW132034, AI678302, AI499463, AI610645, AI636445, AL043326, AI811344, AI571551, AL120854, BF055737, BG031664, AI224992, AI554427, BE963918, AI636719, AI539153, AI269696, AW071349, AI868831, BF792469, AI498579, AI590120, AI922901, BF795712, BF344652, AI349772, AI648684, BE964700, BE964812, AI857296, AI537677, AI539771, AW301409, BF812933, AI866608, AI866100, AI269862, BF343172, BF341801, AI308032, AI862144, BE544111, AI440239, AV732936, BG180034, AI612759, AI491852, AV735353, AL045266, AI273048, AF112227, AF153979, U49188, AK026045, I48979, AF219137, AL133640, I89947, S68736, A93016, I89931, AF218014, L31396, L31397, AF113676, AF125949, AF104032, AF090903, E03348, AX019230, AK026855, A08916, AL133093, AL389978, AF116644, AF158248, A08913, AL133565, AL359596, AF116649, AF116639, AF113013, AK026865, AF078844, AF130082, AL050393, AX046603, AK026741, AX019229, X84990, AL133557, AF116602, AF116646,

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HTTDM15	123	942511	1 - 1895	15 - 1909	BE883532, BG107414, BF314540, BE898459, BE746984, BE542496, AW958579, BF573504, BE734208, AU125474, AW953779, AW292502, AI802426, AU149129, BF575571, BG031927, AA436628, AU150986, AA076658, AA046746, BF081743, AA046670, AW294732, BF095716, AW673051, AW601449, AW601455, AI601235, H66950, H66951, R85537, AA363520, R40736, AI202299, BE092409, AA363830, BF085875, AV749014, AW190087, AA808657, T98596, AW896216, T98595, AA355808, AI910194, AA079565, AW377204, AW377198, AW377106, BE699057, AW377170, AW752839, AW362224, AI223245, BE186054, BE832662, AW579894, AW579890, BE876022, AW377180, AB007866, and AL109823.
HOVAY63	124	944031	1 - 729	15 - 743	R32912, R32812, and AL022725.
HDPFY41	125	946502	1 - 2106	15 - 2120	AL042656, BF982270, BF678765, BF095732, AW971745, AV681512, AV681529, AV681509, AV681500, AV681492, AV645393, AV645392, AV645390, AV645385, AV681526,

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HCOPB92	126	948608	1 - 466	15 - 480	AC000120.
HBJHO83	127	948708	1 - 963	15 - 977	AW139587, AW206289, BF439266, AI418005, AA196170, AV721569, AI493150, AI539840, AA827263, BF525553, AA342835, AV723060, AL135079, AA992466, R84740, AA018860, AA889455, AI032948, AI086195, H05897, AA136660, AI052553, AA335442, R96455, AW341838, R96454, AI204085, AW277153, AI004047, BG253018, AI916309, BE219764, BF439900, AI123630, AW339238, AA521073, AI144557, AA935749, AW207577, AI269030, AW513165, AW611961, AI554132, BF335547, AW604457, AA777781, AA946701, AW604440, AI184875, AW578528, BF945235, AW205588, AV720037, AW373059, AW373058, BE706100, BG026120, AC007276, AC009276, AC078847, AC020910, AC008760, AC022143, AC008747, AL117337, AF205588, AL050308, Z98950, AF030453, AC005088, AL110162, AC005919, AC003682, AC009196, AC011449, AC007793, AP001748, AP001630, AL356234, AC022150, AC005229, AL031432, AK022963, AL031846, AC006987, AL031602, AC008969, and AA583226.
HWMEO44	128	948719	1 - 3170	15 - 3184	AU137551, BE395366, AI304317, AW873045, AI860936, BF055055, AI394148, AI807018, BE930782, AU157883, AI131366, BE930853, AA862613, AI377403, AA126958, AI279884, AW473660, AW297366, AI951292, AI801182, AW206733, AA659802, AI127181, AI807789, W35110, AW044562, AI263384, AA626115, AA127167, BF886019, AW474787, AA133858, AW438973, AI478424, AI350993, W23677, AU139094, H48882, AI784505, AI873664, AA133857, BF478061, BE547913, BF973166, BE154191, BE814299, AI015764, AI520921, AA295407, BF820817, AI826302, BE002337, AI891052, AA310690, R86154, AI718930, AI890831, AW999311, C02402, AA669161, BF094289, AW612303, AA506435, F05073, BF931686, AI056063, AA326471, AW962216, AA485879, BF916803, AA814996, AW995444, AA633940, AA628592, AA514284, AK023661, AL137608, AF038963, AF181119, AF319661, AC010139, AL158824, AC020647, AC004021, AC008179, AL356118, AP001625, AL121763, AL138996, AP001747, AC062033, AP001626, AL359693, AC005704, AC009262, AC004863, AC005686, AL445465, AL158159, AL031073, AC007021, AL034452, AL355382, AK021584, AL118498, AF270569, AC009113, AL158033, AC018900, AC006988, AC078937, AP001039, AC007749, AC009410, AL136300, AC009757, AL359694, AC007455, AL121933, AP001732, AC000392, AC010361, AC005017, AC007363, AC006322, AC012405, AF131798, AC005521, AP001671, AC004231, AL355492, AL022719, AL391818, AF130359, AC005815, AC008177, AC009294, AF212831, AL356954, AC010180, AC006024, AL136501, AC007677, Z80771, AL049833, AC008123, AL138714, AC008952, AC026239, AC008838, AC009365, AC004108, AL163213, AC004078, AC005948, Z54246, AL357129, AL159996, AL121947, AL096828, AC009362, and AI310056.

HFXJA96	129	949001	1 - 1041	15 - 1055	BF793559, BE742939, AW007066, AI869968, AW273225, AI700037, AA443693, AW291991, BE328045, BE747815, AA777593, AI420588, AI033693, AI457222, BF221961, AI954483, AW084920, AI049858, AA203157, AW958390, AW194899, AA777584, N99910, AI150737, N99913, AA379692, BE468258, AA527616, AI458637, AA447078, W25289, BF845179, R80028, BF572256, N75501, AI214958, AI241596, BE799357, F10487, BE736238, BE392003, BE464214, BE391216, BF090234, R79938, R00703, BE735896, AV718692, AW966330, AV707024, AW975618, BE312058, C14331, AV742732, AW964468, AV724520, AV718681, AV705066, AV718489, AW973541, C14389, AV718800, AV699550, N71180, AV720791, D80164, AW978634, AW978648, AV701645, C14429, AV727990, D59467, AV699927, AW966053, AW973445, AW966054, AW960465, AV721644, AW966062, AW960553, AW964477, AV719468, AV720211, AV719783, AV720464, AV719188, D80227, AW966534, AW966022, AW966050, AV731510, AW959062, AV703472, AW966531, AW966041, AV718707, AW966013, AV719822, AW959570, AW966029, D51799, D59275, D80195, AW975621, AV701004, AW966075, AW966065, AW949654, D59502, AW973334, AW959597, AW959799, AW965185, AW965197, AW965175, D80269, AI611738, AW973307, D59610, AV723772, AV742048, AW949641, AV719557, D58283, AV720731, D59859, AV720150, AW959582, AV699447, AW975613, D80022, C15076, AW959628, AW960473, D80166, AW973474, AW973488, AV718931, D59889, AV720203, AW964756, AV718938, AW965158, AV738340, D51423, D59619, AV718633, AW975605, AW978661, D80210, AW965163, D80391, AW973485, D80240, D81030, D80253, AI802240, AV703042, D80043, D59787, AW958992, AV722801, AV719324, AV718440, AV720028, AW956434, AW965177, AW965196, AW965184, AV720878, AV718844, AV718770, AW973482, AW966389, AW958993, AV723927, AW959136, AW964488, AW962082, AW949656, AW949642, D80378, AW964737, AW960454, D80038, AW959202, AI557751, AV744690, AV683513, AI358701, D80212, D50979, D80193, D80196, D80188, AW949646, AW949633, AW966059, D80219, AV720220, D59927, D51060, D80241, AW949658, AV741220, D57483, AW966043, D50995, AW975623, D80024, D80366, AA305409, AW960532, AV721386, AV700889, AV742735, AW949629, AW949632, AW962245, AW973330, AV720812, AW956397, AW949653, AW949645, AW949631, BF089679, AW949643, AW949618, AW949657, AW949655, AI829327, AW966030, BG029829, AW966032, AV723097, AI610645, AW964532, AV742022, C14407, D80045, AW753053, AW966023, AW960570, AW177440, AW959469, AL036954, AW973490, AW103442, AW960504, AW973447, AC011500, AX033851, AX047063, AR018138, Z82022, A84916, A62298, AX047064, AR070327, A62300, AJ132110, AX027925, AJ302649, Y17188, AR072729, S68736, AF058696, AR087649, X82626, AL137480, AX047062, A30438, AX021518, AB028859, AK024594, I48978, AF106657, AR008278, AL096744, AF119865, X67155, AX040974, D26022, AX035434, A25909, AL133072, I89947, AK026927, AF113019, X68127, AK027204,

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HTLGV19	130	949574	1 - 744	15 - 758	AL518685, AU118408, AI392811, BF435451, AA478198, AI435141, AI803046, AA478040, AW206706, AW367708, AA846117, AI928295, AI928292, AK024084, and AF178985.
HMSAC18	131	950257	1 - 1201	15 - 1215	AU130929, AI814257, BF666825, BF110784, AI935638, AI420022, AA777386, AI554876, BE671069, AI014540, AI688634, AI697997, AI688556, AW297238, AI806683, AW263154, AI589076, AI149951, AA806969, AI741202, W44753, BF515202, AA974046, AA931887, BE763568, AA382865, AW969873, AW614265, AW082158, AA781969, R23772, R09585, AI207121, AA484643, AI538065, AW440609, AI619547, AI088390, AI741925, R09490, AW196711, AI584006, AI702846, AV755023, AL043103, AW959372, AW951170, AB023584, AF228917, AB020860, AK001608, Z47777, A30438, L40401, I25947, U46128, AJ133038, and AR040601.
HAPRB43	132	950475	1 - 2152	15 - 2166	BF338835, BF793959, BG260639, BF971421, BF029896, AI654147, BF132023, AI810992,

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HCCMD55	133	956895	1 - 831	15 - 845	AA508185, AA507469, AI027643, AA622967, AA587020, AI832382, AA675917, AI826640, AW004708, BF680504, AL038837, AL039074, AL037051, AL036725, AL039564, AL039109, AL039108, AL039156, AL039128, AL038531, AL039659, AL039625, AL039648, AL039629, AL039678, AL040992, AL039150, AL045337, AL037726, AL039423, AL042909, AL039410, AL039085, AL045353, AL036973, AL044407, AW374686, AL039386, AL039924, AL039538, AW979228, AL038821, AL044530, AL036418, AL037526, AL036196, AL037639, AW975143, AL039566, AW973200, AL039509, AL038025, AL043445, AL037615, AL043441, AI721017, AW969885, AW276663, AL045341, AL134524, AL036767, AV743601, AL045794, AV746102, AV758878, T24119, AW064110, AL043422, AV718844, AV720464, T24112, AV738934, AV701012, AV701118, AW979144, AW969911, AL036117, AV737584, AW013814, AL043423, AV735727, AL036924, AL037082, BF294063, AV717989, AV717980,

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HKBAL08	134	958219	1 - 852	15 - 866	AI598222, AA722521, AA961088, AW813731, BF953169, T47819, AA297068, Z40359, AI698654, T47848, AW384795, AP001711, AP000248, AL136295, AC004867, AP001748, AL133245, AC004166, AL354720, and AL158830.
HKADF15	135	960658	1 - 2143	15 - 2157	AL537210, AL533136, BF345427, AW149077, AI189363, BF725380, AI052124, AI972848, AI336302, AI816720, AW192810, AW055174, AI148561, AW026468, AW072848, AI889989, BG163656, AI678779, BF966582, BF349689, AW152007, BF344992, BF337402, AV733778, AL533137, BF969402, AW964811, AV702560, AV752950, AA411195, AA632007, AI754763, AV725935, AA187659, AA488502, BG012437, AA411095, AA488517, AW380192, W81692, W68748, AV733973, AA128063, AA579881, AA037211, AA488385, AL535898, AW581075, W29006, AI127593, BF958186, W81265, BG000741, AW581079, BE138892, BE856061, W81693, AA479844, AA044753, AA707190, AI005306, AA186718, BF382521, AI128816, AA838684, AA112161, AA937185, AI128549, BE765227, AA488370, AI038838, AW510870, BF590113, AW241743, AI191854, AA634260, AI375760, BE697900, AA946838, AI122640, AI799431, AW150253, AI807683, W67176, BG000745, N39772, AI610621, AI126866, AW088704, W68726, W94696, AI189851, AI423369, AI167706, AI750804, H09725, AW014642, AA682978, AA186659, AI701245, AV725200, W17262, W47107, AI620250, AW085733, AI365999, BF243094, AV745950, AA102171, AW382122, W69696, W84609, AI066654, AA186789, AA188311, AI038848, AI138433, W80472, H10483, T95046, AW005675, R52327, W45606, AI750805, BE714469, AA186646, BG009129, AA705736, AI375026, BG013718, AI742719, AI096392, AA970331, AI189681, H42958, AI831119, R64072, BF726628, AA181038, AA083962, W67175, BE168843, T15745, BF934277,

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HOGES55	136	961337	1 - 1963	15 - 1977	AW182452, BE250716, AI890424, AI640157, AW474326, AW130973, AI056660, AW150989, AI288965, AA242985, AW793562, BE250569, BE465736, AI744015, AI651429, AI636121, R06846, AA251971, AV650220, M91487, AI985781, R06845, AW363115, R02003, BG037194, and C01117.
HKZAJ14	137	961458	1 - 1254	15 - 1268	AW976735, AA883247, AW317020, AI091039, BE349081, BE221788, AI080490, AW009024, AI421443, AI141417, AW838561, AI333982, AW020988, AI332667, AI003921, AA740607, AI373690, AA424587, AA400517, AA972391, AI379240, AA633581, AI370902, AA620797, AA757270, AA909500, AA424632, AI680616, N32107, BE858145, N56779, AI870568, R71439, AI270464, AI085139, R43738, Z41046, AA225666, AI767739, AA502917, W37208, H00748, BF511394, BF887497, AI270546, AW271656, AI791895, AW805578, AA225611, AW370265, AL041562, AI792126, AI299358, R89180, BE671252, AA809663, AW183464, AW838715, AW838708, AL036881, AW029142, BF764614, AA805240, AI872415, AI351544, BE143557, AW299713, AW367344, BF875698, N74449, Z19142, H54493, T50149, D29384, H73186, H90881, AL133051, AF227906, AL021329, AL157406, AL157381, Z83843,

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HLHAE14	138	962362	1 - 2040	15 - 2054	H49208, AI248942, AA358780, H60492, H60446, AI243090, H49394, AP001724, AL031591, AC006924, and AC005234.
HBCJN16	139	965190	1 - 868	15 - 882	AI978837, AI627369, AI564009, AI628545, AI690964, AI538855, AI860651, BF222777, AI683754, AI970793, BF436904, AI812041, AI829891, BF589851, BF032982, AA642553, AI560810, AA470903, AI359026, AI921985, AW664949, AW591110, AI083732, AI818681, AI827128, AI961526, AA125808, AI160064, BE898095, AI564610, AI624988, AI924700, AI278468, AW874402, AA483290, AA858390, N52182, AI225074, AA766421, AI376593, BE396135, AA830375, AW473661, AI698343, AI986231, AW950982, R89609, H78819, AI540430, R88929, BF691490, AA653492, BE382384, AI424782, AI241315, AI699227, R59708, AI613142, AW473446, AI244930, AW051166, AW193591, AW797434, AA909760, AW242968, BF221706, AI336173, AI923108, BF364662, AA128281, AV733824, AV757816, AC004602, X97966, X14479, X14047, and X72874.
HCGAF29	140	965372	1 - 2309	15 - 2323	AL528207, AU124711, BE745523, BE740018, AU124009, BE730967, AU132736, BE899077, BG261113, AW968672, AW971792, AI492156, AW235604, AI880771, AI697107, AI638177, BF183859, AU148517, AI968089, AI624692, AI378254, BE349453, BF062207, BE505015, AU150234, AU154209, AI922229, AA775806, AW044370, AI086087, AI151386, BG105708, AA423984, AA278565, AI073529, AI203148, AW117988, AW470396, BF827404, BF880196, AL135528, AV681665, BF445663, AA423985, AA481532, AW779281, AU127788, AI567161, AI266199, T93231, AI696723, AI655248, AA916500, AA811605, AI749400, BE927591, AA481598, AA523223, AA431069, AA522577, AI696237, H42013, H42014, T92694, AA743286, BE302733, AA258068, BF939161, AA417908, AA723166, AA418159, AL119399, AL119511, AL042382, AL042544, AL119457, AL043152, AL079794, AL134524, AL043168, AI675778, AI370623, BG166654, AI270183, AI613144, AI521799, N25033, AI368579,

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HAHEF81	141	967634	1 - 702	15 - 716	AV683103, BE305206, AW001250, BE305236, AA643098, BF058371, AW054839, AW973518, AI833102, AW083028, AW469562, AI089867, AW134724, BE563230, AI770105, BE798906, AI859283, BE794306, BE727113, AI802405, AA576674, N94517, AI310487, AI367446, AI220318, AW079526, BF431056, AI309785, BE791858, BE736541, BF685650, AA576675, AV700158, AI810441, AA868821, H91632, AV722364, BE305124, AA884876, AA745899, AW406468, BF591335, AI887153, BG025439, AI091509, BE386733, AW083220, BE293628, AA587461, BF877339, AI245325, AI684772, BE250144, AA114265, AA548065, AW296891, AI766800, AA085398, AW071593, AI919368, AA113184, AA886171, BF888965, AA082885, AI611050, AI805079, BF889006, AA305339, AA887298, AV696144, AI352497, AW151136, AL119863, AI862144, BG180034, BG030364, BG031539, AL041772, BF904244, AV655280, AW772685, AW020693, BF038131, BG256592, BF816037, AW268220, AI334450, AW673679, BE904051, AV704696, BG120816, AI520809, BG168549, AI610086, BF970449, BE785868, AL036274, BF814420, BF672397, AI269862, AI610756, AI689379, AI952217, BF822127, BE256437, AW827276, AI284517, AV721521, BE672647, BF968205, AI336633, AW148320, BG031664, AI498579, AV715560, AV760102, BG249582, AI251221, BF854113, AW827289, BG110517, BG164371, BF812933, BG031815, BF341801, BE048071, BE246734, AL119791, AI349967, AL036631, BG036846, BF727072, BE047852, BF338723, BE876033, AA427700, BE047737, AI537244, AI569583, AL041150, AV757639, BE544111, AV645906, BF038134, BE877769, BF792469, BE874133, AI364788, AI335209, BE047952, AI829327, BF812431, AI609592, AL042628, AI270707, AW023590, AI174394, BE880182, BF032768, BF726198, BF339322, AI889953, BG024332, BF826445, BG260037, BG168696, BG034609, AW082594, BF904265, AI349226, AI439478, AW103371, AI468872, AI955866, AI433976, AI500146, BF795712, BG257535, AI309401, BE886728, BE963035, AW268067, BF970768, BG112239, BF856052, AI620284, BF812938, AI524671, AW302992, BF814525, AI570384, AL045500, AI433157, AA572758, AL040241, BG026428, AW946806, BG252929, BF344652, AI636719, BE965724, BF814335, BF527014, BF816455, BF812960, AI539771, AI800453, AI340582, AI800433, AL039086, BG032208, AW071349, AW268122, BG029667, AI340603, BG110684, AI537677, AI445165, AA225339, AL120695, AI282326, AI500659, BE905749, AI554821, AW858243, BE887488, AW169653, AI349004, BE904178, BF885675,

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HBJAB02	142	967807	1 - 1682	15 - 1696	AL529646, AL529645, BE898304, BG112747, BG036058, BF791411, BE392384, BE621757, BE548173, BE895853, BG034671, AA808894, BE901085, BE278873, AW152607, BE795658, AW166898, BG122141, BE782474, BF972826, BE793716, BE140314, AW750993, AA826362,

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HOUCR01	143	968171	1 - 2007	15 - 2021	BF346477, BF970344, AI884801, AA233924, AI125760, H97661, H18098, H19086, AI193252, AI085879, H11343, AL134720, N23132, BF926085, AI671245, BG056879, D81062, AA412275, AA552173, AA503379, R49191, H18987, H19618, R34661, AW590283, F04762, BG056899, BF947363, BF509640, D60732, AI870535, H19253, R07822, H11367, AB046639, and AL109677.
HDTIG18	144	968454	1 - 1566	15 - 1580	AL526279, AL529830, AL524370, AL528814, BE562759, AL529831, BG165233, AL524371, BF685557, AI133513, BE887721, AI057617, BG252265, BE562767, AI982853, AI831623, BE515156, AA648914, AA873629, BE256597, BE222487, AW958929, BF725899, AA280089, AA878448, AW248558, AA744548, BE504278, BE795016, AI304316, BE302017, BE252066, BE295640, AA781577, AI185163, AI955795, AL526312, AI422964, AI571353, AI185152, AA460511, AI313197, BE018406, N32767, AI371028, AI696978, AW439404, AI150883, BE909535, AA447517, AA759128, AA806385, AI335852, AL536983, BF839452, AA459868, AA416893, AI859544, BF512726, AI023406, AA948038, N46869, AI369825, AI128795, W68616, AA025669, AI970652, BF055247, AA934724, AA448500, AI192983, AI167362, W86098, AA864949, BF684491, W69447, AI056657, AW368494, BE265673, AI301282, AA720593, BE695982, AA470054, W72840, W68762, N53510, AI249484, BE540573, AA974936, W69530, AI038444, AA936842, AI348453, AI014303, H98698, AA709334, AA808641, AI312674, AI199491, W92405, BE790027, N81039, AI057225, T03564, AI568703, AA626030, AA973884, AA602321, W00672, H12272, BE259065, AW591539, AA020993, AI368079, BE304909, AW514017, AA670069, AI933159, AV738245, AW058033, AA255941, W35340, T32967, AA568156, AA908647, AA054004, W37082, W46670, W46477, W69899, BF445619, N41767, AI630758, W92406, W86132, AA084553, AA256083, AW172949, AA903756, W72841, AI420992, AA280018, T19225, W69900, AA025668, BE858644, AI160240, BG054803, BE769759, N24265, AV754922, N69042, AW519261, AI475440, AV755645, AW952445, BF432703, AI073732, H80576, AA384632, AA954180, AA977386, AA731196, BE782364, AI546958, AA864850, BF088237, BE769753, AA018468, BE261321, AW661944, Z40864, W07667, AI084547, W37839, T89010, H18524, AI751885, AV744297, Z45130, AA022626, T31441, AW629168, AW362019, R41618, W23741, AA629248, AA059201, H80524, AW149176, F08633, AW368488, BE293875, BE910358, N80003,

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HBLGD30	145	968949	1 - 3937	15 - 3951	AU134073, AU133830, AV648674, AV649343, AV661909, BE439435, BE884067, AV684104, BF130482, AW950668, BG179663, AV720745, AV719320, AU134196, AV658379, AV682989, AI683839, AV734860, AV718561, BF921039, AA219354, AI769578, BE898808, BE971367, BF126657, AI269889, BF574193, BF726784, AV720490, AA741202, AI687338, AU155184, AI302101, AV718656, AI950030, AI889538, AW419072, AA918982, AW088433, AI761095, AI309991, AA281666, AI923375, BE513666, AW006277, AI924724, AA166902, AA402240, AW273276, AU155289, N53433, AU149941, AW015771, AI963654, AI922198, AI458138, AA492037, AA165601, AI128266, AA946849, AI277947, AI343881, AA402701, AW474149, AV652478, AI289226, BE672470, AV682550, AI467936, H04844, AV648804, AA166973, AA171809, AI288268, AW303836, AI823730, BF924128, AA169335, AA769673, AV655147, BE971266, AA165482, AV661997, AI921934, AI358150, AI985661, AV651692, AI277803, AA283660, AA172240, AI812089, AI301236, AI690616, AA171694, AV658439, AI538280, AV658013, AV650229, AV656880, AW193233, AV656493, AV649185, N69299, AV720068, AV650236, AV658487, AV659340, AI064929, AV686668, AV652883, AW839157, AV695293, BE081066, AA661833, AV697695, AA172005, AV657340, AV654764, AV654748, W22608, BE006635, AW950671, H86642, BE065513, AV655339, AI886539, AA953507, AI933892, AV659795, H04754, AV728343, AI194079, AI524590, T68167, AA832118, T69598, AV661653, AV709878, AA333043, AI857292, T71679, T40113, T40914, BE934168, T51148, AW839165, AW118431, BE567199, AW089848, T28653, H86554, AA333248, AW167184, T68242, AW890922, H42697, AA344502, T67818, T67969, T41019, AV652268, AA283661, AW445174, AI926046, BE936564, T69670, R26189, AA344900, AA166820, R46148, AA825794, AA344899, AA527160, BG235955, AA171782, AV652035, AI684991, AI613148, BF571293, AW576487, AV696380, AI648426, BG054975, AI421700, AW050523, AW026809, AW519214, R26437, AA603131, AI301343, AW440530, AA863095, AI479558, AI310961, AW244013, AA172094, AA191647, BE172361, AI933890, BE936569, AI949429, N40513, N50749, AV659135, BF056055, AV661586, AW576821, BE392045, BE065578, BF087108, BF841532, BE065575, BF839027, AW372005, BF837371, BF844137, BF841534, BF155460, BF837360, AW606252, BF087056, BE065616, BF835820, AW383782, AW372003, AW383748, AW372012, AW383775, AW382951, AI909730, M13699, M13536, L33869, AF202115, AF134814, M18058, U49430, AK026357, D00025, X69706, Y12178, D45045, D45043, D45038, D45036, D45039, D45033, J05506, D45035, D45037, X04136, D45034, D45040, D45044, X04137, D45041, S77464, D45042, X04138, AF134057, Z24023, AF260927, AF075665, AC004226, AC009242, AJ131017, AF141647, and

					AC011327.
HFIHK04	146	969387	1 - 904	15 - 918	AI949559, AI810510, AA203625, AW959632, AA702005, AI991043, AW340445, BG251324, AA838409, AI961293, AI160070, AI160071, AA747429, AI143612, AA730360, AA773195, AA682367, AI298831, AA961230, AI268727, BF793895, R83902, BG236172, BG109845, AA953598, AA704547, AI146455, W38306, N79799, BE933639, AI864592, AA299329, AI140380, AI290069, AI186783, AW440342, BE164467, BE164468, AW139541, T91068, AA514600, AA195913, AA508637, T59891, AW816281, BF874763, D20437, AI288391, AA634125, AW965354, AA195432, BE255866, BE547821, BE741757, BF528086, BG258828, BE903000, AI111193, AI904111, AV728544, BF312864, AA318279, BE251694, C03377, AA310941, AW771668, AW964397, R59429, R98152, BE296575, AA370568, BE746935, BE793656, BE971409, AA411943, BF574705, BF316683, AA780433, T91217, AL523605, AA524887, BE185327, BE185262, BG169979, AA728871, AA328245, AF282903, AL136968, U92032, AL354868, AC012072, AC002074, AC007511, AL135924, AL133332, AL078593, AC007796, AL049874, AC016831, AC013358, AC017082, AF020803, AP001614, AC079045, AL163280, AC007564, AP001251, AP001743, AC004963, AL135749, AF217490, AL450169, AC010849, AC025809, AC009362, AC002352, AL031283, AP001679, AC005998, AC018641, AP001724, AP001669, AL023694, AL356414, AF015720, AC016816, AP001683, AJ229041, AC026409, AC005005, AL031387, AL031429, AL136504, Z98747, AF017104, AC008033, AC008560, AC004068, AC004889, AL035427, AL353748, AL035089, AF248484, AL161638, AL133387, AC018642, AL163207, AC026884, AC008163, AC006967, AC008774, AP000472, AL023805, AC034235, AL163227, AP001038, Z98946, AC005601, AL133467, AL133382, AL050336, AL034351, AC016689, AC007126, AP001819, AC017002, AC004896, AC004048, AP001732, AC037193, AP001711, AC003109, AC006062, AC010498, AC005515, AC002069, AC007156, AC004184, AL022401, AC010305, AC016602, Z86062, AL161731, AL133517, AL121654, AC008042, AC010582, AL122021, AP001715, AB014088, AC004998, AL132633, AC066583, AC005229, AL136529, AC004190, AC025577, AC005738, AL118524, AC006031, AF119841, AL078623, AC004815, AB000882, AP000506, U85196, AP000279, AL136359, AP000516, AP000106, AP000038, AC004968, AF179633, AE000661, AC010723, AL161717, AC008268, Z84480, AL157765, AC004053, AP000108, AC009044, AC005880, AL121898, AF241725, AC008543, AL139189, AC008486, AL356057, AL049844, AL132657, AL133247, AL050308, AC005598, AL117187, AC006337, AC005099, AL031316, AC025030, and AL118505.
HODIL24	147	969841	1 - 834	15 - 848	AL041101, BG177845, BF216023, AA281685, N41356, BF350128, BF211006, BF668757, BF932699, and AL355305.
HE8NQ16	148	970046	1 - 2887	15 - 2901	BF966722, AV706600, BF792757, BF976723, BE882014, AW149468, BF105008, AL138321, AA425241, AV724632, BF033996, AW578056, BF966526, AV746348, BF346432, AW752968, BF338848, AW263259, AI004242, AA037179, AA872675, N29085, BF955280,

					AA699935, AA913815, AA425190, AA887078, W92464, R49087, AV745531, R15894, N42047, BF351126, AW370682, AA400368, N49443, H23382, AV711898, AA400369, AA644429, W21227, BF754252, H96938, AW401928, R86075, W92292, BF846791, N64209, BF891292, BE092775, AA193535, Z25009, AI216147, BF515367, N78483, AV735098, AA453929, AA814891, N93457, AA355548, AA295442, AA978114, AA603219, BE855678, AI825796, AL043824, AW182655, T78936, T08772, AL157620, AA724481, AW752237, AA193438, AI400285, AV701015, AI358866, AA910165, AW351740, BF684919, BE855736, AI432369, AW631129, BE259815, BF087116, AU124620, AU121144, AI978558, T78991, AA555092, N56946, AW665735, AI826826, AA971640, AV704599, AI056732, AL119173, AI038989, BE879922, W92507, AI246684, AI080258, N93740, N20183, AW902953, AA425759, AA486738, AI214476, H67025, AA907233, BF999810, BF885209, AC009155, AK022130, AK022752, AK001688, AB046832, AK024314, and AL137000.
HOFMS34	149	973010	1 - 1006	15 - 1020	BE736746, BE379381, BE378584, BE378500, BE378075, BE515303, BE780958, BE614826, BE393601, BE394088, BE735483, BE392462, BE394406, BE378901, BE394632, BE378758, BE615872, BE388690, BE378357, BE387695, BE563033, BE392780, BE392047, BE395788, BE394179, BE392832, BE389364, BE389345, BE395181, BE392472, BE515219, BE615406, AA464826, AA453149, BE735871, BE392729, BE387682, BF210381, AA442802, AJ403128, AC007078, and AC004980.
HOFOB11	150	973505	1 - 781	15 - 795	AL533548, BE789099, BG116125, BE887081, BG107890, BF700463, BE880927, BG030517, BF030581, AW957637, BE781717, AV733955, AV710046, AV718270, BF668753, BF669212, BF701113, BF129991, AV714563, BG254144, BE878731, BF701393, AV651776, AA314273, BE568697, BE545003, BF242902, BF666696, AV757896, BE904360, BF978924, BF665580, BF028073, AW351912, BF697317, BF037589, AA305370, BF213439, BF724466, BF241919, BF185721, BF692658, AA306430, BF667996, BE888408, BF964977, BF669293, BF185277, BF700414, BF211541, BF665260, AV707435, AW752399, BF244581, BF541632, BF680798, BF028474, BE960947, BF104162, BF029708, BF667913, BF695497, BF665760, H18045, AV701697, BF381984, BF699689, BF184304, BF185628, BE565642, BF244157, AW630212, AV655721, BE569124, BF131429, AA181455, AA315633, BF132852, BF031301, BF692251, BF668875, BF691021, BE779388, BF213025, AA186625, BF214411, BE568476, BE898217, BF664872, BF690925, BF031185, BF243347, BE958024, W79010, BE865509, BF674472, AA531308, AV714850, AA204997, BF665354, R80694, BF307415, BE567887, BF977109, BF106436, AV755841, BG025945, BE568064, BG029271, BG249184, BF240785, AV682318, AV681563, BE814385, BF214964, H22737, BE168154, BF575790, BF664562, BF670667, BF215015, AA085686, AA001470, BF750591, W55909, BE168394, W20245, BF030440, BF752526, BF693954, BE865807, AA297247, AV661606, AA298432, AA298665, R64278, BF104127, BE813635, BF131056, AA297858, BF184679, W93867, BF757214, AV757484, AV759869, AA298833, BF241923, H21844, H00199, R93867, N25143, AA088796,

					AA311342, BF688082, BG013959, BF185554, AV759272, AA298837, AA454212, AA431132, AV712434, AA298834, BE092617, H40729, H50262, BF666320, Z45895, AA459602, BF792635, BF248219, AI879195, AI878894, AV746675, T54811, BF700100, AA297310, BF541763, W39740, BF093955, BE504467, W25405, AA297706, AI879578, BF848994, AA297836, BF696039, W28449, BE699018, BE768788, BE768801, BF383084, T10517, BE929505, BF573510, AA447414, BF085285, BF245173, AA192828, BF670186, N26355, BF093978, BE708343, AW364790, R15512, BE929384, BF248439, AF051894, AF288991, AF288992, AL121989, AF288740, AF267986, and AF267984.
HTLHN94	151	974667	1 - 1988	15 - 2002	BE393547, BE740719, BG251252, AI970830, AI478592, AV707783, AV728270, AV706183, AV706724, AV702427, AV727932, AV726505, AV701611, AV704974, AV659189, AV725927, AV706746, AV729983, AV709407, AV726067, AV725369, AV704592, AV728777, AV732002, AA744769, AV753374, AV658362, AV705020, AV702637, AV704916, AV723449, AV702798, AV751921, AV730781, AV751555, AV732149, AV730288, AV731744, AV731313, AV752043, AV731759, AV731708, N90871, AV730547, AV731977, AV757088, AV732155, AV710417, AV728872, AV730711, AV701237, AV731694, AV701320, AV707882, AV730165, AV731915, AV662191, AV726674, AV730171, AV752443, AV746276, AV751573, AV756053, AV761002, AV731043, AV760693, AV730816, AV757887, AV732353, AV757553, AV758481, AV707088, AV656240, AV756895, AV731275, AV733303, AV706910, AV702409, AV702869, AV710534, AV647654, AV726738, AV710938, AV706104, AV711496, AV755874, AV702498, AV711095, AV732653, AV752447, AV732746, AV710421, AV702787, AV758133, AV707686, AV714368, AV707171, AV758003, AV726480, AV702671, AV732089, AV705234, AV752684, AV755714, AV707589, AV703591, AV745906, AV702354, AV706035, AV711567, AV724987, AV727103, AV703417, AV652808, AV755473, AV726392, AV729129, AV702537, AV656004, AV710495, AV723452, AV707948, AV728715, AV730456, AV763669, AV711185, AV646736, AV757673, AV732255, AV702026, AV727189, AV757281, AV705263, AV702954, AV706683, AV746382, AV729357, AV727355, AV652156, AV701783, AV711240, AV726830, AV710146, AV701728, AV763440, AV709935, AV710562, AV725387, AV707690, AW575986, AV709356, AV704924, AV705504, AV725281, AV761270, AV711274, AV710825, AV703012, AV703232, AV709897, AV763171, AV745415, AV704611, AV697638, AV757864, AA453130, AV710375, AV757171, AV710935, AV702958, AV645778, AV650367, AV687176, AV707685, AV704981, AV706662, AV707117, AV706234, AV755335, AI475480, AV701538, AV706357, AV705662, AV728289, AV708809, AV705343, AV729220, AV728884, AV707798, AV757686, AV726520, AI028697, AV729568, AV703367, AV707556, AV745756, AV756386, AV710906, AV706453, AV721645, AV702984, AV706989, AV725386, AV726624, AV706814, AV758022, AV706047,

				AV706851, AV731884, AV701875, AV701499, AV752993, AV727576, AV706891, AV730859, AV706290, AI149937, AV705047, AV732200, AV701496, AV730866, AV728455, AV725152, AV757671, AV733811, AV652547, AV701560, AV726559, AV704116, AV706220, AV704279, AV725043, AV730018, AV728249, AV705416, AV726754, AV756897, AV733842, AV721318, AV703862, AV704757, AV709025, AV699148, AV758766, AV704064, AV708423, BE907622, AV706527, AV730449, AV727347, AB012955, AX020190, AR017907, AX035462, AX009712, AX035980, I13349, A91965, AR062871, A38214, I56772, I95540, AX026824, AR062872, AR062873, AX026823, AR088705, AX026821, AR031374, A20702, AR031375, AX001325, AX001326, AX001323, AX001324, A20700, A58521, A43189, A43188, AR020969, A84772, A84776, A84773, A84775, A84774, AR067731, AR067732, A58522, A91750, A49700, AX006816, A18053, A95051, AR080470, AR077142, AR095492, A23334, A75888, I70384, A18050, A60111, A23633, AR007512, AX012337, AR043601, AR083151, I06859, AR091393, AR079804, I60241, I60242, E12615, AX018504, AR035193, AX023553, AX023548, AR027100, A92133, I28266, AX003207, AR085082, AR085089, AR085091, AR085079, AR085083, E13740, AX001322, A10361, AX008555, AR093385, AX009487, AX032758, A63067, A02712, A51047, A63064, A63072, AR068507, AR068506, AR073846, AX011024, AX021518, A25909, A35537, A35536, A11245, AR025207, A02136, A04664, A02135, A04663, A02710, A07700, AX027811, AX027809, A13393, A13392, AX027813, AX030369, AX030368, AX027812, AX027810, AX027816, AX027817, AX027818, AX027814, I21869, AR074365, A85396, A70040, X68127, I08051, AR069362, AR069364, AR028564, A86792, AX042372, A85477, A60985, A60990, I66481, A44171, I66488, I66489, I66485, I66490, I66491, I66492, I66493, I66482, I66483, I66484, AB016080, A91754, I66498, I66497, I66496, I66486, AR037157, AX046332, AX001082, I66495, I66494, I66487, AX006821, I18371, AR089207, AR089206, AR089208, AR089205, AX006825, AX006826, AX006822, A83642, A83643, A83151, AB037923, AR035975, AR035977, AR036905, AX003194, AR096545, X81969, A67220, AR072502, AR072503, AR072501, AR095491, AR022240, AR095490, AX006820, AX035632, AX035630, AX035631, AX035629, AX006819, AJ244003, AX046223, A95117, AX033488, AX033489, AR018924, AX033474, AX033486, AR018923, A48774, AX023549, A48775, AR015960, AX023550, AR000007, AR015961, AX006817, A23998, A95052, AX023554, A98767, A93963, A93964, I63120, AR043602, AR043603, AX023555, AX023556, AX023552, AX023547, AX023551, AX023546, AF261960, AF261959, AX006818, AR054109, AR072500, AR035974, AR035976, AR035978, AX006823, A58524, A58523, AF261962, AF261963, A24783, A24782, I03343, AF261966, A81878, AR069650, AX047064, E14304, AR096518, A27396, AX000085, AX042377, AR091518, AX042375, AX042373, A49045, E16678, A82653, E16636, T82228, R50315, R50324, R50325, H28329, H94382, N79828, W17091, W38400, AA252866, AA252927, AA740285, AA858387, AA449992, AA824253,

HLDRT31	152	975754	1 - 697	15 - 711	AA884524, AI301704, and AI670928. AL534044, BE393397, AV683465, AV684627, AV689796, R95052, AL036390, AV660907, H56723, BF955572, T82240, R94378, H47159, AL045713, AV692841, H57229, T68625, R29170, H77694, AL046550, H67944, H67929, AW392670, BE695785, AW971745, AW804686, AL119319, AW604723, BE705903, BE705906, AW858526, AW858525, AL119439, AW861944, U46347, AL119484, BE705905, AL119396, AL119391, AL119457, U46350, U46351, AL119324, AW577135, AW384394, AW861889, AW858455, AW372827, AL119401, AW363220, Z99396, AL119399, AL119443, AL134525, U46349, AL119497, AL134527, BF868684, AL119363, AL119444, AL119355, AL119483, AW877209, AL119522, AL039912, AL037205, U46341, U46346, AW604726, BF868687, BF868697, AL119418, AL119335, AL134538, U46345, L11924, I36334, E12495, I84668, I36338, I36332, I36333, I36337, U37055, U28054, AL137798, AL021920, U28055, AB026436, AJ279014, AR066494, AX046357, AR060234, A81671, AR069079, AJ251859, AX030435, AR054110, AR043113, and AR080280.
HWLHW86	153	975771	1 - 1639	15 - 1653	AI718512, AU123914, AI748996, AI951481, AI745085, AI809713, AL525153, AU134222, AW188163, AI721217, AW007667, AW103479, AI828182, AW004850, AI686915, AI628538, AW070523, AI962963, AI697298, BG248600, AI471537, AI635101, AI889467, AI978632, AW860950, AW167961, AW474348, AW190605, BE674290, AI571882, AW129970, AI922593, AL047838, AI579919, AU126920, AW055284, BE869430, AI955311, AW242156, AW272287, AW873982, AI743468, AW513282, AW129586, AW571890, AU117740, AI624711, BE869709, BE870743, AI469222, AI625272, AI684079, AI679591, AW780155, AA424668, AI679333, AW473340, BE047040, AW475082, AI571037, AW029090, AI809712, AA130871, AA528645, AI459465, AW780425, AI540550, AV748643, AA528637, AI024785, AA406196, AU155306, AA411381, BE672486, BF028802, AW591592, AA577525, AI333612, AI687294, AI241214, AI299682, AW473388, BE177710, AW749077, AA483903, AA847578, AA424571, AI889684, AU149678, AA502398, AA580416, AA130926, AW862587, AW820899, AA835115, AI707527, AW075441, BE394676, AI216279, AI579897, AI886530, AI285185, BF038363, AI285353, AA908633, AL525154, AA724605, AI219442, AV748644, AI269213, AI038566, AW769100, BE843159, AW196292, AW361641, AW610090, AI824537, N92767, AA527850, AU144491, AI475347, BE168336, BF034328, AI078813, BE159920, AA443854, BF759422, AI074078, AA846205, AI803815, AI300799, AI689710, AA983659, AI289495, AI022819, AW473456, AA548485, AA554075, AA235136, AW193746, AI538623, W33013, AA158014, W32964, AW578996, AI123271, AA635113, AI567018, AA157929, AA526284, AA113218, W39707, AI702978, AA137210, AW971233, AI364251, AA493629, W15485, AA446644, W19420, W35400, BE720821, W37704, R81916, AA146623, BF673265, AI494071, AW132100, AW951883, AA055858, AI215543, AA158159, AI625623, AI284796, AW971035, AW372994, AA160230, AI362334, BE002725, BE843163, AA234829, AI890170,

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HOFNM53	154	976051	1 - 1576	15 - 1590	
HDPSE86	155	976207	1 - 1781	15 - 1795	BF974829, BE397549, BE397511, BE562264, BF976322, BE561928, BE396546, AW245133, AW001450, AV708281, AW248252, AW247758, AI918591, AI299148, AI741759, AV705891, BF327331, BE718012, BF764942, BF353438, AI583563, AI961410, AI679359, AW081424, AA865519, BG260187, AA807017, AF086713, AF086714, AL137462, AF262962, U31501, AK026830, and X52562.
HHFOE18	156	976216	1 - 1574	15 - 1588	AW964029, AA447232, BE155292, BE706821, W00562, AI752017, AA478880, BE072829, BE072835, H83253, AA377805, H53182, AW175670, AA295304, AA300104, C14702, AA431941, AI378520, AW444970, BF350693, AI127045, AI633683, AI345957, BF002061, AI033307, AI394583, BF349443, AI738683, AI677991, BE072831, AW207729, AI627661, AI274923, AW317022, AI983858, AA478623, AI751620, AI913309, and AL355492.
HHFNH27	157	976968	1 - 945	15 - 959	AL527962, AL517471, AL535489, AL538229, AA608734, AI760012, AW117939, AI038063, BE275287, BF966024, BF182712, BF794346, AV711147, AI992187, AI089408, BE271201, BE515144, BE785567, BG110602, BG028741, AW007641, BE735414, BE622727, AL538228, BE784154, BG108156, BG026353, AI444578, BE735452, BE277188, AW081275, BE562586, AL517470, BG034283, BG177569, BE270977, BF129032, BE730250, BE515135, BE745656, AI911660, AI762510, BE562179, AA573212, AW058227, BG252386, AW026216, BE781752, AV755448, BE780584, BF305350, BG036120, AI479604, BF976260, BE893200, AU126121, BE794959, AA482981, BG026476, BE277036, BE905103, AW167227, BG166075, AL525753, BE513556, BF237575, BE885910, BG028762, BE886434, BE734123, BF309611, BE736636, BE789073, BE878062, BF794656, BE275217, BG249366, AA595496, AA843894, BE612825, BE893060, BF686280, BE887584, BF237505, BF675994, BG113631, BE297840, BF307019,

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HMMBZ81	158	977264	1 - 538	15 - 552	H59173, AL133861, AW131034, C06458, AL042282, AW467497, F34939, BF945995, BF760573, AA526099, AL120191, AI610634, BE149287, AW609312, BG106119, AA744449, AA744465, AA745470, BF853581, AA728911, AU145868, AL022336, AL133173, D84394, AP000509, AC007225, AC021036, AL133230, AC006111, U96629, AL034379, AC006050, AC003029, AL034422, AL109865, AC007619, AC010077, AP000692, AC004896, AC007227, AC011491, AP000967, AF200465, AL121905, AC004150, U78027, AC018755, AC005921, AL035422, AC005003, AP001725, AL022316, AL135927, AL391114, AC006312, AC009244, AC024075, AL138815, AF196969, AC005211, AC004596, AL035249, AC053467, AL136000, AF001552, AL050307, AC004678, AL031588, AL031284, AP001670, AC004962, AC010463,

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HSLGF32	159	977704	1 - 1585	15 - 1599		BE784734, BF528372, AW664953, AW294691, BF670655, AA411625, AA464785, AA971619, AA909175, AA406575, AA256188, AA486336, AI868650, AW276335, AW271701, AI908352, AA488056, R93249, AI864543, T84938, AI282858, H95668; AA256150, R16409, R12671, BF588476, AI797610, T91956, BE622938, AL042508, BF755924, AL035669, and AL133063.
HEEAH23	160	978593	1 - 427	15 - 441		AL529051, BG168572, AV687207, AW247426, BE249849, AK022736, AB014549, AC008132, AC023491, AC007981, AC023490, AC007957, AC011718, AC009288, AP000552, and AC008079.
HODFU73	161	978812	1 - 771	15 - 785		AI337853, AI290624, BE613007, AW190836, AA036954, AW392096, AW452245, BF039005, BF699641, N95243, T25091, AA036998, AI648608, R47204, AC007392, U85707, U33630, and U33629.
HNBUA49	162	978998	1 - 1620	15 - 1634		AI871477, AL520825, AL525683, BF686227, AL040660, AI049979, BE746500, BG260309, AI051966, AL043088, BF792585, AL041341, BE249840, AI760387, BE273020, BF690244, AA772213, AW440407, AI860755, BF663608, AU118417, BG169576, BE873422, BE378917, AI192298, AI818417, BE293451, AI676150, AI828421, AI827007, AW071445, BE315277, BE293812, AI701967, AI690912, AW151086, AW167306, BE293738, BE250330, BE250827, BF526581, BF972183, AW795577, AW474833, BF527867, BE221350, AA837413, BE858496, AW071494, AW276436, BE260699, AW577804, BE304919, BE222850, AW673333,

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HVVDU73	163	979346	1 - 2290	15 - 2304	BE616124, BE736954, BF688519, BG260795, BG259849, AW374307, BE616155, BE744973, BE292792, AW994447, BG248534, AW374312, AW374318, BE531047, AI940618, AW601821, BE672984, AI817651, AW170508, AA253308, BE868161, BG009649, BF435220, AW365668, AI940653, AW365613, AW081928, AI674909, AW572265, AI961488, AA573938, AI923587, AA159477, AI940633, AI620321, AW089967, AA636061, AI866782, AI888802, AI457146, AI932621, AI379539, AI186201, AW374300, AI262916, BF739152, AA934750, AI940625, AV656354, AI354896, W60466, AI318103, AI394281, AA588706, AW970628, BF736328, BF883594, BF689168, AW079392, AW369391, AW853512, AW188567, AW188566, BF835784, AA252902, BF736819, AW376365, AI472809, BF836557, AW751488,

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HHESX72	164	979468	1 - 467	15 - 481		BF797761, AU130033, BG258778, AU119794, AW965889, BG028456, BF970462, AV728480, AL522193, AA315962, BE786036, AW960384, AV715388, AU131704, BE695281, AU132895, BF219071, AL536015, BF184112, AU129283, BE729622, BF696698, BG167039, BF034416, BE695309, BE265086, AA319546, H97758, BE544565, W90369, BF332962, AW408349, AI078747, N59486, AA359114, R09724, AW242801, AI765280, AI990488, BE244651, H22047, AA085546, AA091085, AL521415, AI858033, BF111619, BF061858, AA776634, AA359816, N56221, AW602190, AI040358, AI248524, BF792722, T18889, T70782, AW057675, T18872, BF906431, AI633892, AW205883, AW872943, AK023053, AK021905, AC005189, AK023007, AK001665, and AL049758.
HOCPY88	165	979547	1 - 1395	15 - 1409		AW004023, BF690205, BF791885, BG029479, BF000545, BE047000, AW977945, AA909986, AU151274, BF512375, AU147671, BE350857, AW467591, AA142943, AA811324, AA150646, AW468491, BE672409, AI301026, BF689816, AW845190, BE392310, AW514680, AI984280, BE140523, BF229544, U53081, D20997, AC006544, AC003065, AC005033, AF035299, U70987, AF180527, and AF229166.
HOGDC64	166	979666	1 - 1794	15 - 1808		AA868550, AL530411, BG254611, AW954131, AI201166, AW193909, BG151533, AW084462, BF791908, BE260095, AI922273, AA523858, BG260949, AA781100, AW105220, AA596049, AW005327, AI214604, BF984366, AI802642, AL524639, AW090564, AI567735, AA897529, AA193192, AA629069, AU147852, BF979856, AA858423, AA425360, BG149247, AA908794, AA778624, AI686401, AA393835, N72685, AA868129, AA923361, AU148101, AW183908, BE206598, AA075361, AA580324, BF743368, AI357135, AA926834, BE670517, AI803714, BF197076, AI284934, BG116362, AW983892, AI284936, AU154733, AI130025, AA758676, AA907260, AA311449, AI077310, AI298616, AA706885, AA969247, AI457308, BE045930, BF743297, AI418560, BE219395, AL043460, AA861359, AI720212, AI342423, AA468338, AI936296, AA075362, AA454947, AI458647, R37961, AW246825, AA136701, AW607431, BF743315, AA548507, AA973365, AA053135, AI659588, AI925822, AA425566, BE439633, N68585, AA834427, AI635130, AA167347, BG164125, AA431980, AI264546, AA431965, AA176535, AA748183, AW750653, AA989525, BF223350, F31676, BE253169, AA468339, AW950325, N46268, AA769323, AI985073, AA994254, AW470425, R53597, AI621110, Z24883, AI285063, W81103, AW090765, BF957740, AW628661, AW592166, BF767591, AI703044, AA385660, AI860560, AI202413, F30676, F32050, AA564380,

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HSIEA14	167	980139	1 - 774	15 - 788	AW301736, AL042667, AL042670, AV695478, AW328202, AW238341, AI538491, AA569494, AA572983, W42588, AI278972, AL120141, AI821382, BE042006, AI307201, AA501461, AA837597, AA514450, AV761433, AI753969, AA613761, H68343, BE139139, AI250552, AV648653, AI284543, AW020612, AI689198, AV656063, AW613448, AI005613, BF917473, AI254770, AI744830, AI820534, BG030789, AI251284, AI251034, AI251203, AI223626, AI249853, AA526099, AW023515, BE138387, AA602105, AI798407, AI439393, AI690497, BE169870, AI692245, AL133519, Z83819, AC002350, AC021036, AL031733, AP001706, AC005844, AF017104, AL157372, AL117341, AP000073, Z84487, AC007282, AC011742, AL022336, AC019106, AC008011, AF049895, AL109797, AP001710, AL160231, AP001759, AL137073, AL391114, AL049713, AL133454, AP001683, AC058791, AP000104, AC007880, Z93341, AC011904, AP001714, AC008738, AC016689, AC008543, AC009225, AL024507, AB000882, AC006449, U96629, AP000344, AC007225, Z98946, AL050333, AL049838, AL121782, AC004491, AL009181, AL035249, AC005064, AL121825, AF205588, AC024082, AC009060, AC005663, AL121949, AC007546, AF107885, AP002530, AC011500, AL137060, AC005969, AC005216, AL031848, AC005291, AL133453, AL353802, AL078591, Z98742, AC002418, AC004386, AP001728, AC013429, AC018513, Z83843, AC002303, AL139826, AC005703, AC008008, AC003042, AL033381, AC005332, AC007938, AL121872, AC006121, AL138755, AC073574, AC011311, AL139109, AE000658, AP001725, AL138828, AC009236, AF196971, AC002429, AC009016, AC012156, AL157791, AC004847, AL109743, AC006160, AP001712, AC007486, AL157413, AC005352, AL109923, AP000692, AC005386, AC004977, AL034550, Z96050, AL360227, AC000004, AJ229041, AL121878, AC008267, AC025442, AL117333, AL136979, AL050317, AC008750, AL359704, AL031681, AF027390, AC004743, AL008732, AC009501, AC007690, AC005562, AC078889, AL355886, AC009238, AC005214, AF280107, AL121852, AC009470, AC007773, AP000352, AL031685, AL136365, AC005821, AP001720, AC020898, AL356379, AL049760, AL049776, AL441887, AC010219, AC003992, AL138752, AC012351, AC012309, AL080317, AC002381, AL035458, AL031289, AC003662, AC036103, AC007312, AL445687, AC006120, AC024600, AF241726, AC005358, U80017, AC004859, AL133153, AC027689, AC005069, AC007376, AC009953, AC018684,

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HSPSY43	168	980269	1 - 2040	15 - 2054	BF570385, BF570180, AI088647, BF966694, BF569195, BF970112, BE878705, AL535894, BF569896, BF340266, AI810738, BF530956, AV725665, BF342973, AI692873, BE271105, BE857228, AI927745, AW615420, AW151706, AA604247, AI635900, AW939256, AW957194, BG230571, AW379494, BE677698, BG056692, BF512850, AW021444, BF690190, AW664391, AW139560, BG110726, AW874658, AW993371, AI814903, BF934595, AA181281, BF381326, AI376165, BE812324, BE812388, AW815353, AW391289, W28891, AV728400, AV728587, BE349042, AV728581, BF325900, AW337194, AW024107, BE396023, AA633395, BE162632, BF527023, AA588810, AA280897, AA225306, AW391295, AI079706, AW815349, AW615553, AV709840, AI355025, AW815345, AI933698, AA804867, H40915, BF886757, T28873, AA838292, N81045, AI880159, AA114109, H28176, BF961849, AA324213, R59225, AA683224, AW469170, BG057112, H01864, AW880763, AA937395, AI358224, W28580, AW246848, AA324217, H11123, R94484, BF874169, AA085617, BF928701, BF874235, AA085638, N36164, BF874174, AA324212, AW498678, AW067997, AA062605, R94485, BG025843, AA134213, H49769, H27022, BF805105, BF957582, AL535893, T16201, BF934521, AA350507, H20777, BF932804, AA280980, AW798119, H11229, AV737823, BE206328, AW248633, AA363975, W27715, H22592, BE833306, AA324216, BF447502, T15660, BE833364, H28112, H01863, R86196, AA487774, AA114108, AW385117, D51308, AA350426, H17100, T60117, D56054, R48122, D53610, AA304177, H93755, BG152466, AA826966, H61236, H85695, H40957, R44085, D51453, D53774, W07855, R78317, BF868560, BE714884, D54618, T52550, BF923220, R33264, BE208564, R36346, AA531190, R23239, T16142, F03239, R77946, AI699038, AA308600, R38937, R69514, BE812147, BE315213, AW058016, R33115, AA531179, R48009, AI867014, T03351, BE833265, AA307648, BG015610, AI906574, BE561639, AA350885, BE271301, BF445731, AA327459, AI906575, AA335642, BF803379, R28604, R48570, H30153, AW945153, AA350733, R28687, D51827, R50396, BE707678, R48669, H61237, BF844403, BG055063, R35977, BG252221, BF926656, T60235, BE833079, H93754, AW883909, BF753805, BF445655, D52027, R69383, AW298249, BF844409, AA317457, D51335, BF844405, R46848, H30776, AA747462, AI583318, AW800460, F10359, AA345500, W23224, R44794, BF844410, R42513, AA809531, R47759, BE019728, F07289, AW950062, BE771559, N44157, AA373489, BF093102, AW885353, N69784, AW885226, BG007722, AI358239, BF771401, R23314, R28550, BF933179, AL110273, J05243, U83867, X90845, J04828, X86901, AF084186,

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HSXBH24	169	981029	1 - 2428	15 - 2442	AI052508, BE048691, M79221, AW338514, AI262660, AA953663, AV726620, BF752825, AA813125, and AI373503.
HOFAE61	170	981108	1 - 1219	15 - 1233	BG033389, AI393309, AW005351, AI807923, AW960185, AW166132, AW664889, AA194090, AI916382, AI799077, AW328387, AW340414, AW960398, AI131240, AI188081, AW300307, BF131508, AA855025, AA287690, AI694793, AI138878, AI362805, AI198516, AI131388, AA287658, AW139698, BE551852, AA934428, AI701814, BF056959, AI824988, AI680753, AW328388, AA308513, AI654495, AA304908, AI955554, AV741520, BF111228,

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HCFOF82	171	981272	1 - 1549	15 - 1563		BG026326, AW966939, AW967551, BE737753, AI435412, AA250982, AA811466, AI376343, AI081045, AI742225, AA131095, AA131031, AI942351, AI341938, AA489627, AA993407, AA489728, AW473525, AW268683, R91619, N98926, AI085828, BF082425, AI168315, T78254, AA250983, AA320897, AA454806, BF935477, AW380400, AA864917, W31152, AW514550, BE003760, and AL133558.
HOCMT79	172	981309	1 - 1580	15 - 1594		BE798445, BE304432, BE731636, BE897199, BG255861, BF979006, BE812965, BE728469, BF128024, BE263640, BE727056, BF358932, BE206746, BF942861, BE540525, BF311992, AW362926, R67305, T33893, AW945345, Z46204, AA324589, AW965329, AW965323, AA324404, T80030, H50913, AA281511, AA333367, BF381111, BE816128, T08567, BF991518, R18797, AA332977, AA687499, BF946438, BF822854, AA223464, BE796302, BF917604, AW392506, AW601333, AW372325, AW601316, AW601334, AW372336, AW392504, AW392498, AW372308, AW372323, AW601317, BF725792, AR087892, U32575, and AF055006.
HKAEI03	173	981319	1 - 452	15 - 466		BF342305, BF972034, AV702899, BG250659, BE875013, BG255188, AW732994, BF969129, BF973001, BF130310, BE779851, BE268549, BE783925, BE272577, BG024907, BF127762, BE784922, AI751567, AI138643, BG027985, AI564787, AI131276, AA010288, BE464595, BE858428, AI810680, BE256739, BF431981, AI312112, AI659460, BF964885, BF038601, AW614586, AI918066, AI421103, AA159852, BG036944, AA143643, AW131612, AA577070, BE170902, AW418672, F29120, AI885777, AI540181, AI889585, F36716, AB037839, and AF006043.
HOCPO31	174	981593	1 - 1686	15 - 1700		BF344523, BG120897, AI928341, AW026244, AL119974, AW003141, AI953528, AW004077, AI803375, AW001409, AA716616, AA425741, AA677488, AW594550, AI193181, BE349215, AW795298, AI262269, AW297973, AW592480, AI042286, AI436208, AI126751, AI149281, AI167937, AI187153, BG006418, AA885372, N53016, AI962663, AI143577, AW242268, AI049776, BE677119, AI818483, AI272839, AA595397, AI032066, N78497, AI742227, AU134204, AA938952, BE041590, N73656, H00225, AI187185, AI986359, AW152033, AI032073, AI302095, R77880, AW128839, AW594571, R94775, AA806624, H24559, R64451, T09483, R94950, AW957178, AI252768, H17531, AW193712, AA057787, BF061972, AW296092, AI435183, H00177, AW340042, AA535123, AW079257, AA834425, AA595382, AW662791, AI949751, AI968910, AI806704, AI954639, R34244, H21209, AA047604, R94693, F10899, R35571, H22912, AA425233, AA931668, R63839, R39530, T77481, BF357906, AW401504, R55754, BG058398, AI802542, AI440239, BG110684, BG179993, AI869367, BF527014, BE048026, BF725868, AL036631, AV715331, AW071417, AI500077, AI269696, AV650703, AV682479, AI758437, AW087445, AV715263, BF868489, AW071349,

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HAOTG88	175	981606	1 - 807	15 - 821	
HVCAH21	176	981768	1 - 746	15 - 760	BF316070, BF568141, AV758470, BF527619, BE314804, BF969586, BE409471, BE410535, AV733489, BE261170, AW157185, AI928869, BF304497, AW024568, BF971396, BF310503, BE296966, BF980412, BE408549, BE884399, BE386397, AI907018, AW440484, AA883920, BE793077, BE794471, BF206989, BE877585, AA496679, AI378856, BF311371, AI859291, BE350719, BE895663, BE885969, BE315547, BF241672, AI817825, BE793139, BF210205, BF216772, BE733918, BE897650, BE312906, BE905785, BE879978, AW516581, BE382725, BF038020, BF026271, AI624337, AW732541, AW674196, BE262376, BF237436, AV710278, AV740622, BE899283, BF206520, BE276874, BF206851, BF237515, BF243039, BE313650, AI024995, AI174779, AI572642, AW163157, AW651789, AW732534, BF125793, AI025126, AI474128, AW474610, BE547663, BE831015, AA187250, AA877228, AI267915, AA886988, AV733930, AA182921, AA642996, AA306692, BF126019, AV741980, AA075599, BE263229, AA181154, BE831027, AV756250, BE205781, AL526932, BG118384, AA075346, AI929036, BF734890, AI400538, AA316049, AA181153, AA526075, AA315701, BE709954, AA098806, AV727129, AA130645, BE218789, AI421479, AA482798, AI144352, AW022366, BE871748, AA451691, F36272, AA722490, AI015274, AI860627, BF767068, AI476031, AA196855, AI076945, AA601896, AA603149, AA037796, BE792238, BF674456, AI266715, BE932205, N53005, AA307818, AV727405, AA125759, BE710240, AI194072, AV764534, AA210871, AA130034, T74180, AI985806, BE709957, AV735365, AA070953, AA714540, AA453235, AV744480, BF030579, AA130033, BF239974, AA443652, AA385659, AW583010, AW675307, BF966331, N52289, BE045155, AA130615, AW277116, BE645844, AA912073, BF184415, AA856876, AA478103, AW276117, AL527098, F25881, BG117430, AA065190, BG028557, H49982, BE005862, AA187382, AW270600, F24478, BE792009, AA076185, BF091615, AW371216, AA725739, AA878729, N30376, AA365073, AA602423, BF091064, F24829, AA484666, BE870423, AA885827, AA745043, BF091625, AA156093, BE044822, BF375830, AA398035, F27966, F34663, AA861214, AA085547, AA371299, AA992886,

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HFPCK56	177	981812	1 - 1934	15 - 1948	BE739833, AV751551, BE539375, BE879961, BE619356, AA012925, AI690904, AA418407, AW028084, BF061035, AI949671, BE219361, AA449061, AI955218, AA772167, AW771435, AI305287, BG056669, BG122658, AI039957, AI796800, AI421026, AW952787, AI689738, BE857334, BE797251, AW373177, AA037175, AI680796, BF001323, AI360089, BE440106, BF438532, AI568970, BF223290, AW299760, AI948837, AA418504, AA410416, AA976077, AI925315, N56916, AI744545, AI186166, BF344446, BE545371, AI801467, AI560863, AI307790, AI620925, AI685502, AA931566, AW589991, AW373172, AI094972, H22670, N44951, AW026324, AA772572, AI049895, AA449773, BE876258, N39575, W27237, BE878083, N33168, AA469378, AW028003, AA402063, AI276817, AW803238, AA351859, AA861181, AA938412, AW079992, AI311559, BF907727, H96974, AI888644, AA151221, AA351860, AW139343, AW130580, W32509, AA937530, H22687, AI813495, AA410273, AA993422, AA687549, BF941191, AI143750, W27206, AW373182, AA340324, AA044269, AI860157, AA151220, AI370443, R48542, R53630, H14486, AI271975, AI140110, AW593928, R12193, AW275061, W93548, AA321771, AI611136, W32606, T66931, BF941785, AA758353, AI581671, R48627, AA398924, AA349145, AW138501, BF527602, R96451, AW515323, AI674456, N59828, AI918973, R96452, AA991280, AI985395, AI687472, AI268792, AA338948, BF747204, AI280425, AI370507, AA991278, H27505, AA142905, R12929, AA410417, AI284737, T83253, W27541, AA364215, BE719110, AI880036, R62328, R51963, H27578, T66932, AI961564, D54538, AA847693, AA338947, BE538557, T49336, AI360057, BE939130, AI351186, BF818515, H04226, AA044169, H02921, AA026556, AA069380, AW138557, R62327, AW118418, AI198091, W96350, AI424187, R39917, AI868856, T10481, BE964453, BF507638, AA847337, BF735896, N72776, T90723, AI873143, AI682149, AI419753, AI472343, AI394598, AA436364, AA652885, T49337, BE002485, N46721, BE620017, BE622776, AI335238, AI810464, AI927142, AA069327, BE787445, AI078649, BF987031, T11055, AI564318, AX015375, AL162074, AB042237, and AF099664.
HAOSJ58	178	981859	1 - 1131	15 - 1145	AL515972, AW029556, AA004208, BE883613, AW015902, BF802700, BF666138, AI917287,

					AU149521, AA007410, BF791634, AA251650, AV716889, AU153411, AU151309, BF795834, AW474709, AW967661, AI247962, W58247, AI241375, AW594337, AA251538, AI492247, AI598036, N72095, W58248, AA603659, BF804913, AI431332, AA424023, AV744248, AI656462, AA664303, AW590631, AW592235, N23125, BG115061, AW105622, BF056545, AI913221, BG180121, AA886810, AA679595, AI373555, AU149339, AI380841, AW129016, Z39592, W02366, AA189143, AA777004, F02874, BE926666, AW731774, AA768164, BG122759, BE501179, N73304, BE926735, AI521225, BF737731, AA394252, AA424100, AI963833, AI282264, BG259121, AI476066, AK000638, AK024266, AF071592, AF277375, AF241316, AF179308, AJ271784, AK022717, and AL133073.
HOPJT48	179	981862	1 - 336	15 - 350	F20667, AL514627, AL036146, AL513553, AL513597, AL513907, AL514919, AL513999, AL513631, AL514015, AL513911, AL514791, AV755668, AL514691, AL513977, BE965014, AI475817, AL513951, AL515191, AI469532, AL514087, AL513693, AL514867, AW085799, AI349772, AW074869, BE887488, BG109270, AL513713, BF793187, AL514063, AI500077, AL119748, AL514473, AI696846, AL514983, AI567632, BG112879, AL043326, AI702406, BE047952, BF793324, AI888953, BG110241, BG036846, AL515413, AW071349, AW071417, BF970446, AI537303, AV681618, AI349645, AL040243, BF817926, AI432969, AI800453, AI800433, BF882343, BG058398, BG179993, AW169653, AV682222, AV681630, AI521012, AV682252, BE969709, BG257535, AW169671, AW827249, BF883916, AI340582, AW301409, BG110684, BG260037, BG180996, AL045500, BE965891, AL513577, AL047763, BF816811, AW274192, AI620284, AI758437, BF812933, BG058208, BE048071, AI637584, AI349004, AI536685, AI568870, AI499463, AI249257, AI250293, BF970162, BF724691, AV756150, AL121365, AI702433, AI433157, AI224992, BE018334, AI580190, AI590128, AI868831, AW103371, BF792469, AW104724, AI682841, AW087445, BE781369, AI633419, AI538716, BE966388, AI498579, BF039003, AI866002, AI802542, AI433976, AV756328, AV729890, BF795712, AV709517, AI445025, AI564719, BF971016, AI349933, BG031815, AW238730, BE964812, BE964741, AI348897, BG168696, AV717299, AI697137, BG178488, AI497733, AW999049, AL036802, AW026882, AL044207, BG110517, BE964700, AI866608, AW162071, AI281773, BF812961, BF527014, AI539771, AL036396, AL036403, BE048081, AL135661, AI281779, AI570384, AI857296, AV757737, AI678302, BG151247, AW813006, AI269696, BF817392, BF343172, AV711924, AW148320, BF340031, AI275175, AI281762, AV756703, AL047041, AL041772, BE963035, AI064830, AW074993, AI567351, AL038605, AI349614, BG164371, BF726322, BG032208, AW089572, BG260881, AL038778, AW268253, AI282281, AI312152, AW075351, AV758209, AI345735, AI610645, BE047852, AL514097, AA640779, BE876033, AI349937, BE172767, AA613907, AI619502, AI500659, BE964876, AV682266, BG252929, AV681759, AW068845, BE909398, AL513943, AA508692, BE047863, BE904178, BF885675, AI620868, AV655645, BE877769, AL515019, AI636445, AI340519, BG178809, BG035511, AW148716, AV756342, AL514793, AI273142, BE965556, AI818683,

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HCFAV61	180	981914	1 - 1221	15 - 1235	BG033901, BG252785, BE543055, AV722449, AV702154, AA628439, BF668342, BF692352, AI768330, BE894056, AI743632, AV694035, BF437204, BE856844, AW304160, AI337885, AI924514, AA837493, AA426551, AI745073, AI963737, AW821215, BG058671, BF509387, AI242029, BE503709, AI942469, AA160524, AI160326, AV725848, AI912616, AA890454, W95882, AA824442, AW518009, AI701598, AI273641, N93250, AA287410, AA418905, AW449609, AA160567, AA703542, BE671219, BG105483, AA779451, AA111935, BE669882, N32408, AI332415, W17057, W25108, AA810170, AI382034, AI499772, AI589724, AI720736, N56828, AI123003, W95918, AW022386, AA083712, AI808404, AA777136, AI806090, AW965046, BG105254, N89643, AI467879, AI247254, AI784644, AA725064, AA343169, AA569724, AA694506, AI698201, BE542567, AI244592, BF218794, AA287358, D80112, AW973029, AI206216, AW965048, AW889223, BE843684, BE843522,

HPDWN44	181	981956	1 - 934	15 - 948	and AK000541.

					R74261, H15768, H42468, H42681, H43449, H60096, H69969, H71589, H85394, H98245, N28549, N40132, N40844, N54906, N78197, N99645, W32944, W38819, W46910, W56106, AA025797, AA031691, AA035536, AA130026, AA149910, AA157483, AA281356, AA532481, AA603556, AA610276, AA617732, AA627954, AA837359, N85557, AA431114, AA708116, AA725139, AA845939, T11351, AI244072, AI308158, AI220771, AI632782, AI859690, AI811046, AI950900, AW025993, and AW055299.
HOVJY54	182	982032	1 - 1118	15 - 1132	AL536886, AL519771, BE903122, BE906714, BF981167, AL529998, BF980868, BG110444, BE906350, BG026745, BE733132, BG118469, BE908645, BE281012, BF527761, AL529999, BF204049, BF527895, BF338699, BF527959, BE896386, BF346362, BG179270, AW373882, BG121683, BE902906, BF339518, BF528481, BE795781, BE797253, BE264544, BE793598, BE799039, BE395716, BE904642, BE798297, BF129057, BE909217, BE797464, BE791245, BE798589, BF317485, AW577397, BE259895, BF337918, BE798842, AI366141, BF345330, BE793570, BE254266, BF689031, BE387799, W48799, AW249723, BE736728, AA121648, BF915406, W79098, BF058087, BF434845, BE266716, AW245243, BE275433, AW965510, AI420864, BE501218, AW958156, N30494, AW166500, BE274757, BE562577, AA523509, W74502, AI421445, BE274734, BE542936, AA076659, AA309806, AA602391, AA947286, BG056181, AW148931, BF827786, C14268, N99361, AI367349, BE266342, N59225, AA335673, AW518636, BF750898, AL120945, AW137008, AI936982, AI916893, AA335414, AA336127, BF338054, AI769470, AI337000, AW206563, W31030, AI419527, AA371822, AW006577, N98776, AA335239, N76692, BE645990, C14269, AI572122, AI368200, AA641497, AI634762, BE150214, AI684498, AA827390, AI217398, BE150209, W49625, AI081813, AW206959, AW607363, BE743774, AA725340, AA079566, AI672387, N34422, AI766926, AA478173, N48657, T11147, AI365401, BF221855, AI950175, AI813446, BE466923, AI382536, AI382559, AA659150, AI420810, AW900866, AA357437, AI565511, AA478017, AI800023, BE673470, AW615779, AA773507, AI362447, AI242987, AW183593, BE673583, AI399691, AI738446, AI243140, AI659508, H16643, BF438348, AI651868, AI805041, AI568339, AI823968, AW451053, AW137813, AI927588, AA631086, AI699620, AA077819, and L07392.
HLDOG74	183	982042	1 - 870	15 - 884	BE741661, BE733571, BF685462, BF984053, BE745150, AV686105, BE792465, BE901550, BE515104, BE884515, BG033955, AI052336, BE312803, BG178966, BF794342, BG036584, BE544000, BE746597, BF337890, BF038967, BE264172, AI831045, BE874094, BE910663, BE733667, BE264374, AW170205, BE544180, BF127998, AI309846, BE539160, AW160727, BE787749, BE787345, BE271779, BF667331, BG257671, AW157143, AW440255, BF205294, BF183127, AW583332, BE784901, BF671774, BF115955, AI857442, AW583701, AI560800, AA582176, BF244048, AI824142, AA485962, AW025617, AW516053, BF204148, AW439339, BE786757, BF667242, BE278628, BF130358, BF030011, AA854126, BF219377, BE271039, BE855730, AW513598, BE297318, AW439387, AW162229, BE297859,

HE8MM52	184	982197	1 - 2789	15 - 2803	BE280579, BF979190, BF245667, AW118054, AA635192, AW169142, AW674748, BF692567, BE281362, BE019807, AA551363, AI446101, AA617816, AA661621, AW950636, AW515901, AW166234, AW516869, AW173721, AA147816, BF213463, AI624267, BF668293, AA843831, AA491461, BE281598, AA046960, AW080229, BE207118, BE383593, BE269269, BE301062, AA284529, BF033039, AA147964, AA779189, AA886801, AU151184, BE541264, AW905878, AA709317, BF185131, T27878, AA489885, AA046940, AI200718, BE501607, AA977837, AA287072, BE295551, AA308390, AW163112, BF687680, AW675350, AA917888, AA315960, AI149590, AA599391, BF697377, BF218545, AA662287, AA009788, AI929782, AV744141, AA676677, AA314717, AA961410, AI878965, AA281634, AI688201, BF698890, AA954211, AI362751, AA929069, BF196313, AI193083, BE207789, AV736143, AI083792, AA772752, AA659107, AA983589, AV742172, AI138509, BF184787, AI040249, AW732855, AI191696, N92863, AI151496, AA687717, AI299551, AA070997, AA857870, AA503718, AV735528, AA190930, BF090320, AW058118, BE206366, AA070618, AA503128, AW407757, AA047377, AV743448, BF916297, AA128677, AI056932, AA503135, AA503108, AI393887, N74980, AA773467, AA855028, AA493807, AA650564, AA559223, AA190701, R99319, AA483970, BF229552, AV742823, AA658476, AV741392, AA307151, AI826883, F36699, AA489572, W32721, AI143806, AA190460, AA812381, BF104071, T79922, AA281695, AI194047, AA502951, AA676762, F29670, F36691, AI634447, AW005735, AA856710, BF942352, AA594442, AV743031, AV735719, H96947, AV739957, AI272958, R57018, W20469, AA191403, BG119796, AI274572, AA191288, AA740554, F26383, AA009897, R99413, R05797, AI748989, AA595773, AA282515, BF753031, F26620, F01244, AA128767, AA320093, AA343244, BF035539, R32398, AA374363, AI611288, AA374425, BF360820, AW473036, R32399, D29012, X61971, D10754, U13393, U13394, E05950, AL050277, AL135933, AF031147, AL357195, AB028451, X63574, AF119336, AF213396, U91329, A59344, AK025015, AF260566, AK027221, AL133640, U49434, AC020910, AY004290, AF070632, AL050129, AX014095, AL353999, AK026613, AL359620, Y08864, AL137478, AK000432, AK026164, AL137665, AF116610, AL133624, AF126488, AL096744, AL133608, AF019298, AR038854, AL117644, Z98036, AL157433, U77594, AL137526, AL110197, AF205861, A12297, AL133623, AC009364, AC018643, S77771, AB044545, AC004227, AF003737, AK026647, AL133081, E12579, AK026659, AK025431, U87620, AK025761, X97332, AK000614, E12580, AX015416, AK024978, AL133112, AC018639, X53777, AF225424, AL161953, AK000212, AF130110, E01614, E13364, AF057300, AF057299, AC025226, AC007869, AB049892, A57389, AK026480, AK026518, T57661, T59327, T87448, R25859, R26674, H03115, W05680, W25589, AA025424, AA055954, AA057036, AA190760, AA910572, C00011, AA092293, AA093654, AA652601, L31986, AI559731, AI825361, AI885878, and AW024506.	AV651781, AW965446, AI623305, BG105418, AV695144, AW500557, AI962601, AI816919,

					AI809660, BG180470, BF238787, BE958617, AI453203, AI686764, AI051938, AW008755, AI671303, AV696246, BF574073, AI624404, AA599814, AI862650, AV752796, AW088764, N49595, AI373326, N46907, AA630029, AI076703, R52979, AA682606, N66860, AW504901, AI637810, AI804504, AA635074, AI216350, AA761707, AW975470, R61617, BE144059, H04056, R13437, AV655299, AA806300, AI565337, AV690970, AV683075, AV661993, F05802, F05782, AA688425, BE093642, T68530, R60949, BF216998, T98033, N93069, AA332693, T98114, BE969752, AI377881, AI927670, W24722, AI767039, F08707, AV682040, AV681756, AV724929, AL119139, AV661953, AW805670, AI670931, AW276928, AI913173, AC026439, and F08205.
HJBCC19	185	982465	1 - 1554	15 - 1568	AL529581, BF793008, AW968792, AW958616, AI005133, Z78392, AW665074, AW572797, BE910519, AA311683, AA227581, AI961773, BF311030, AL529580, AA490975, AA580009, BE857081, H15751, W88486, BE011902, BE011961, AI669828, AA378108, AA203400, AA215739, AW297449, BF512524, N34147, and AK000516.
HODAA93	186	982618	1 - 1010	15 - 1024	AU134734, AI921858, BG035733, AW503819, AW502845, AW393515, BE463976, BF085697, AW590049, AW025827, BF927064, M78377, AU135081, AW503556, AW999737, AF002223, U58032, AK001816, AJ224979, AF057354, AF073997, AF125314, and AK023451.
HSPSI74	187	982764	1 - 1578	15 - 1592	AU118627, BE614379, BG109394, AI051622, BG035128, BE745111, BE747176, AU133917, AA977180, AI828930, AU133984, BE906377, AI928364, AI189753, BE621857, BE904639, BE907348, BE788794, BE879963, AI819390, AI445461, BG167065, BE790436, BG119322, AI453743, BE619041, BE621186, BE620997, BE439796, AI983655, BE908365, AI685095, BE908977, BE884393, BE613669, BE789335, BE879041, AU135866, AI633575, BF037650, BE910282, BE906666, AI564644, BE547180, BG122252, BE737005, AI925607, BE905184, BE785244, BF036140, BE617891, BE906281, AW071625, AI591358, BE906618, AI720939, AI804422, AW080238, AI250777, AI678712, AW338147, BE392486, BE881236, AI865838, AI963432, BE874626, AW192593, BF126211, BE897209, BE974032, AW383999, BE548372, AW510672, BE546656, BG113740, BF105867, AI262930, AW372926, BF037109, AU137549, BE904461, AI694111, BE548097, BE785027, AI346835, BE877056, AI927769, AA292956, AW629505, AW262737, BE879732, AI161312, BF791201, BE044033, BF790033, BG165112, AI696905, AW513200, AW008570, AW651691, AI871950, BG122807, AI377596, BF674901, AA083510, AI597801, BF691383, BE617437, AW629109, AI093510, BF132064, BF382972, BF222820, BE543834, BF184069, BF573710, AI240988, BE867124, BF690916, BF195127, BF593608, BF182976, BF184281, BE905927, BE501957, BE880450, AI911921, BF106087, AI424384, AI591386, BF215412, AW820297, BF131142, BF247995, AV726627, BF102675, AA479712, BF818868, AA877242, AA706057, AA315188, AW961686, AI148698, AI677934, BE564028, AV732963, BF978564, BG169978, AW583735, AA948565, W52095, BE619741, BE961220, BF031297, AV654555, AA524526, BF687984, BE385852, BF102872, BF246934, AA088439, BF979244, AA843108, AI248307, BE156265, AW015724, AW572531, BF690647,

					BF670998, AA889018, BG118773, BF687915, AA479834, AA626058, BF571504, AI285092, AI591384, W25540, AW205937, BE349186, C17732, AW959385, BE971477, AI027865, AA733014, AI955858, BF572812, AI492554, AA844898, AA452515, BF244568, AA453027, BE219784, BF126097, AI671727, BF184176, BF247378, AW779725, AA129575, AA903050, AI567995, AA404570, AI470033, BF576011, C17963, BE825569, AA088544, BE543766, AA662517, AA699452, AA723200, AA043217, AI075878, BE961124, BF057147, BF676177, AA147228, W52847, AI990245, BF673172, BE963891, AW673152, W38161, AA627686, BF575906, AA113196, BE182595, AI799814, AI333170, T66110, AI972739, AA190873, AI859160, AI446615, W45410, BE182608, BE619182, AI990827, BE327120, AA182640, BF678404, AI298935, AW085158, AW471421, BF243031, BF570900, AA682601, AW103470, AI242230, BE044134, I34297, U34276, AK023364, D16854, X75684, D86467, T55840, T65026, T85378, T97664, R21752, R21800, R38028, R38114, R79190, R79933, H27252, H28594, H38179, H52504, H61762, H64985, H64984, H80983, H64985, W19298, W60075, W73887, AA010631, AA011222, AA035067, AA035576, AA037696, AA037722, AA043216, AA085492, AA129574, AA136658, AA136645, AA148284, AA155661, AA157944, AA190427, AA190472, AA190966, AA191414, AA192519, AA250778, AA502832, AA581093, AA603586, AA837326, AA962397, AA988297, W60032, C05782, C06111, C06123, C06365, C17476, C17504, C16377, C18304, AA649494, AA291465, AA411100, AA421678, D11921, AA478271, AA478328, AA487893, AA486595, AA719173, AA722206, AA724739, AA757735, AA989662, AI032569, AI061065, T10930, Z25898, Z28771, AA953883, F09579, AI244845, AI245632, AI246953, AI249545, AI251817, AI254320, AI261359, AI270788, AI270830, AI275372, AI306933, AI309876, AI334860, AI340796, AI348877, AI363829, AI453453, AI446740, AI432033, AI472527, AI468237, AI500576, AI565439, AI582462, AI224222, AI189366, AI650338, AI349390, AI589264, AI621320, AI686240, AI692846, AI693030, AI738844, AI745717, AI769516, AI798415, AI798502, AI800106, AI823466, AI865912, AI872628, AI918453, AI918523, AI950693, AI927217, AI972899, AI985583, AW016166, AW088968, AW197954, AW242958, AW275048, AW191997, AW194272, and AW300456.
HCEHZ42	188	983008	1 - 3628	15 - 3642	AL537881, AL517309, BE735051, BE901285, BE616892, BE735353, BE793731, BE733509, BE545486, AL517310, AI745249, BE734335, BF526598, BE779600, BE796507, BE798600, BE886723, BE617349, BE734009, BE280110, BE901683, BE276201, BE891303, BF342463, BE729254, BE910567, BE884594, BG255411, BE279129, BE888923, BG031148, BE537150, AA604400, BE734392, AW964738, BE259025, AW327313, BE616860, AW385802, BF108767, BE903733, BE349111, BE257437, BE328784, AW156910, BF060707, AW246117, BE263626, BE392648, AI620896, BE252755, AW732968, AA398262, AW778939, BE349863, BF436950, BF964072, BE799126, BE962236, BE781464, AA602489, AI566556, BF954806, AW249583, AI160402, AI809859, BF766680, H21144, H51462, BE616366, BG257069,

					AI608637, W37225, AW103894, AA984583, AI860074, AI251822, BF964921, H50198, H50199, AI637978, AW236505, AI553932, AA308870, AI341897, W37565, AI571251, F26897, AA922512, H38486, F34532, BG152624, H09117, R24306, F02992, R44903, AI624869, H29803, H46459, H47000, BE277457, AI932959, AW244024, T23597, AI814804, AA707234, AW385702, F13335, AI702387, BE834031, H44917, R40088, AI003681, AA548650, T78815, AA523188, F04394, T40327, AI332972, AI363841, Z43697, BE559682, H42170, AI678524, AW105674, BE747069, T41190, H51420, AI283350, BG014941, AA729769, H38475, AA889494, R12936, H09467, AI277180, C02213, H38470, AW844667, F13332, AA779046, AL537882, BE302833, BF764692, BG112124, H21101, BF333843, AI653323, BF949218, AA399433, H42992, BE172552, BF766013, BF948977, BE939200, AI955921, AF062360, BF514170, BE771818, I76198, AJ238509, AK026112, AI671155, and AW003308.
HDPVU15	189	983592	1 - 1393	15 - 1407	AL526272, AL525155, AL522999, BF966555, AL526230, AL523065, AI608975, AL525156, AI356555, BE738267, AL522957, BF940042, AU132734, BG036876, BF207755, BE866533, BE999964, BF216980, BE567528, BF210168, AW006213, AA506981, BE748710, BF238741, BE565646, BE567849, BF028372, AI097642, BE671753, BF669347, AA481159, AI365242, BE263776, AW613149, BF207815, BF062845, BF207601, BF184549, BF029492, BE748034, AA600213, AA570018, BF677978, AI380165, AW474849, BF029410, BF212774, AW327326, BF242826, BE782106, AI189808, BF673083, BE958173, BF691558, AW327647, BF242098, W40404, BF183977, BE566862, AA521171, AI824172, BF701792, BE564186, BE737955, AI630337, AI276975, BE762520, BF183896, BE865656, AI078467, AA706141, AL047101, BE502602, BF207203, F08084, BF241687, BF246011, AI638395, AW947427, AW236896, AI076444, BF575292, W92066, AI370021, H54752, AW083735, AA308891, AA971116, AW952287, BF745131, BE563907, BF907533, R93244, BF431085, AA834180, AI220183, BF754428, F04320, BE566548, BF381304, AW750302, AA193557, BE075259, AW378464, AA847005, BF213891, AV688842, H54751, N93924, AV687331, BF745923, BF798270, BF214281, AA290913, BF209678, BF381625, AW606584, AW384533, AV699554, AA301337, AL042687, AA569904, AI189079, R57070, N85824, AA828789, AW979044, W92049, and M87339.
HT5GC28	190	984008	1 - 409	15 - 423	AW629796, BE907694, AI879258, BF125522, BG165445, AI991040, BE265179, AA306760, BE386666, BG033049, BF569429, BE616679, BE961094, AV752683, AA554831, AI904451, BF345953, AI563938, AA421977, AI908006, AA310481, C04874, AA325475, AA641261, C04859, BE298529, AI627256, BE876461, BE907784, C03419, AW085607, AI879639, AI907999, AI828997, AW800145, AA702425, AW834911, AW996129, AI348015, AA331368, AV726768, AA633265, AI078778, BE965867, AA477052, BF128018, BE698358, AI246215, AV704488, BE905105, AI356116, BF981367, AC009470, AX011754, X96506, and U41843.
HDABW50	191	984168	1 - 510	15 - 524	AW160956, BG112870, AA181146, AL533095, BE299316, BF206076, AL518638, BG025731,

					BG027680, BE019254, BF797145, AW160779, AV701299, AL533158, BE254796, BF128863, BE267759, BE618134, BE397759, BF183232, BG034440, BF982019, BG251910, BF797411, AA306380, BE898025, BE897092, BE304609, BE280212, AL533932, BE256616, BE888620, BE257413, BF972257, BF305365, BF303592, AV701256, BE777834, BE785075, AA361278, BE259295, BF033090, BE872617, AL536483, AA147916, BG032975, BG109112, BE616894, Z21306, BF062245, BG170907, BE466819, AU077114, BE542087, BF204786, AA295792, Z20331, AA311755, AA370388, AA381537, BF568489, BE799154, AC027269, X52882, D90344, M12899, A45915, D10606, S46763, M34665, D90345, AF143497, and AF143496.
HAQBH11	192	985043	1 - 1283	15 - 1297	BG033206, BF342428, BE512834, AL048282, AI879320, BE856361, BF795509, AU151801, BG261226, BG034970, AA744603, AW665535, BE251894, BF109751, AI554548, AA582428, BG031393, AI741757, BE676082, AI879319, AA488479, AW248852, AW406490, BE256937, AL047958, AI004611, AA037421, AA774634, N93305, AA430402, AW249274, AI400297, AI811153, AV722095, AI741768, BF125670, AL047959, AI097609, AI348358, AI221281, AI929211, AI928959, BG059980, AA430649, AI189422, AA429252, N24950, AV763462, BF821350, W84606, W79170, AI807903, BE675976, AA156930, AA156806, AW957268, AL520686, AA918136, BE350569, AI436788, BE465495, AI914409, AA731701, AW007162, AI572971, AI127872, AI086033, AI304732, AI304534, AI304332, AI436606, AI148551, AI273244, W25157, AW732151, AI016547, AI334031, AW245121, AA195312, AA680089, AA706611, AA905742, AA857129, AI935026, W74366, AI475996, AI077774, AI858890, BE618488, AA613374, AI424179, AI572567, BE302299, N37064, AI469806, AA648333, AI310080, AA854601, AA922513, AW469487, AI276775, AW978876, AA904130, BE677872, AA703663, AI832558, AA195123, AW401707, AL520541, F20916, AI434634, AI167203, AA554680, AI015217, AA716603, AI919489, AI400655, AI369295, BF204499, AI096816, AW291743, AI708380, AW510583, AI073623, AI864517, BG235989, AW957984, BF432700, BG027523, AL048281, AI473968, AI142442, H21173, AA010920, AA628365, AA181912, AA680368, W68434, AA535548, AW193651, AA666297, AW970399, AI567256, N33827, AA723469, W88714, AI129518, W02166, AA927718, BF436216, AW129400, BE903621, BE894137, AI937756, BE255000, AI439069, AW085013, AL528761, AA291158, BE618888, AL520685, H21172, AA701980, W88713, AA745783, R60749, BF438994, BE379605, AI266717, AA021053, BF220074, AA352112, AW151019, BE618705, H62602, BG122824, AI985732, BE619838, AA576306, N41653, AA777363, AA329553, AI536627, BE619636, AA364327, BE619554, AA523080, AI968125, AI362972, R16958, W68552, AW082162, H77490, W60381, AW888780, AI239605, H00750, BE778855, BF002315, AI419366, F37003, AA281392, BE252322, R55029, BE539494, AI264447, F33844, BE622622, AV758923, AA927434, AI300497, H95107, H19581, AA995088, AV739146, AL522112, AI254228, AA909383, BE783148, BF964544, AI933194, BE619936, AW206638, BE386528, N67439, AA032085, AV738905, AA906240, W32502, BF664072, N80233, BG026963, BF943594,

					N88679, W38324, AV739446, BF943595, H77489, BE619403, BF797152, F13662, AV758240, T85967, AA356672, AA827089, AV738715, AA886406, W60290, BE880331, AI565666, AC004148, AF275902, L04636, M69039, X75913, AR001488, AF238300, AJ001101, AJ001102, T75519, T79324, T97266, R00559, R43811, R43811, H19498, W35357, W84587, AA195016, AA256539, AA429036, AA541335, AA886821, N46376, AA090596, AA096370, AA649533, AI350333, AI432739, AI701659, AI866522, AI874327, and AW272778.
HMVAW42	193	985280	1 - 1033	15 - 1047	BE882789, H18418, H18419, BF983783, T98073, BF799367, AK024419, AL049742, D86997, D88269, AC007050, AC002041, and AC007882.
HAGDF03	194	985323	1 - 886	15 - 900	BE743574, BE747360, BF037152, BF037322, BF185217, BF034907, BF035464, BE735974, BE735948, BG177694, AA912117, AI809647, AA904850, BE715907, AW167552, AI146565, BE932773, AA074391, BE932728, AA905581, BF057950, AW197091, BF818794, AW582452, AW362760, AW362834, BE736338, X76029, AF203444, M94555, and AF222762.
HOPKI29	195	985401	1 - 656	15 - 670	AW967189, BF568535, BE876991, BE222939, AA504246, BG249370, BG255913, BF308620, AW328087, BF034851, AW328088, BE793300, BE905639, AI735694, AI095336, BE386578, AA614065, AA569837, AW196810, AA608885, AI653486, AA613913, AI924658, AA613925, AA554728, AI560961, AA719377, AA469078, AA830299, BF038609, AA203548, BG177899, AA614181, AI858312, AA552154, AI200336, AA885917, BE620103, AV754386, AI031613, BE784692, AA081285, AW166322, BE042784, BE791140, BE964673, AA911010, BE048169, BF568842, AA741206, AA081284, AI126452, AA155948, AI138974, AI139507, AA890569, AV751934, BF125381, AI371201, BF125620, AI205847, AA826559, BE714318, AV726932, AI355171, AI191488, AI311103, AA974366, AA632296, AI581287, W19605, BF125603, AI369911, AI052549, AI363011, AW192081, AA724119, AL110319, AA757027, AI492635, AI310711, W80967, AA828873, AA716667, N70808, W35100, AW190632, N93842, N94928, AW206213, AA804201, AW205535, BF222360, AA045330, W40298, AA186411, AA583415, AI299768, N94313, W47097, AI310460, AV739579, BG168459, AI185445, F21331, AA045388, AA602057, N69883, AW263722, AI874123, AA300062, AI133096, AA308875, BE766731, AA188134, W01415, AI192988, AI002735, AI863303, H73006, BE175080, AW603296, AW883548, AV742934, F00800, AI749433, F36662, W80968, F31017, AA303960, AA902606, AA657819, BF214015, AW883024, AA483632, F22498, BE694643, AW800284, BF820314, AA844336, BE702621, AI206672, R48509, AI445725, AI358193, BE646027, AA599755, BF752265, T90159, AV743096, T90057, F26867, AW882945, AW883656, AW375553, T35390, R35896, BF477469, BE085557, F29236, R48510, BF083095, R35895, N44815, N88653, F29357, AA193068, AW883822, N90560, N57064, D25765, AW059723, W20367, C20592, AW883811, AI253621, R29399, AA283439, BF213077, N64284, AW800074, AW882794, AI000414, AW883496, AW883108, AW883699, R57063, AI802283, N98855, AA155903, BE069170, AW385521, AW883325, AW364453, AI332761, AW820144, AW819764, AW819769, AW606771, BE766667, AW883216, AW819735,

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HAJCA11	196	985580	1 - 1282	15 - 1296	AU132390, AU124559, BE900238, BE732404, AU129885, BE080187, BE926773, BG114544, AW500118, BE537542, AU131408, BE789187, BF922033, BE281277, BF089292, BF083954, BE731775, AU128452, AW875091, N87006, N86017, BE295990, AU133348, AW875092, BE207290, BG027252, BE085014, BF242268, AC006509, A58904, U28946, U54777, U73735, D89640, and D89646.
HWAHA11	197	986078	1 - 1131	15 - 1145	AL528672, AL528671, BE740519, BG179875, BE876837, BE409722, BF125146, BE384347, BE905434, AA480075, BE736786, BE386983, BE385086, AI708432, BE909934, AA777273, BF901579, AA455206, AA362335, AA969968, AA427548, BE275509, AW104489, AI799353, AA421632, AI078240, AA427707, AW955562, AA454864, AI310388, BE743523, AW170140, AW089692, AI129255, AA903911, AA362336, BF813903, R72751, R72760, AA554328, AA483784, R48745, AI197789, AA304308, AW591924, AA320293, AA491393, BF541788, AA360465, AW839762, BF818256, BE622335, AA143722, AW591933, BF927574, BE071386, BF754668, BE622797, BE071396, BE967257, BE243667, BE071302, D20583, BE729081, AX041029, and AF188504.
HSAMI43	198	986158	1 - 1595	15 - 1609	AU149573, BF034032, BE278549, BE731160, BF034631, AW236853, BF084841, AU126259, AI761782, AU151440, AU149075, BF699903, AU150909, BE542926, AL527731, BE539229, AI628901, AU150578, AU152956, AI354451, AW386462, AW386546, AW386459, AW386633, AW386541, AW386540, AW386674, AW172296, AW386290, AA496720, AL527730, AW386399, AW386293, AW386545, AW386675, AA827175, BF109445, AA766675, BF572742, BF700363, AW673859, AI039522, BF904724, AI954042, AW386400, BE538430, BE783497, BF361388, BE535955, AW386676, AA496777, AA332056, AW386463, AW401913, AU125409, BF349062, AW386593, AW386404, AU119856, AW794691, BF361390, AI630067, AW468663, AU126032, AW610565, AW605675, BE816416, AA969139, AA625769, AA948540, BE816439, AI829160, BE833448, AW386548, BE011481, BE011489, BE816391, BF767633, AI798526, BE816420, D59324, AW674070, C21288, AI254727, AI648699, AL040011, AI445620, AI927233, AL040241, AI887163, AW082532, AW051088, AI445256, AL043152, AI677797, AI445812, AI783792, BE393784, AL513729, BE964614, AW076124, AW088560, AI471429, BF921295, AW089275, AV721755, AI590575, AI972170, AL041150, AI368816, AI586931, BE883591, BE084795, AI630877, BG122101, BG251076, AI538885, AV733682, AI628284, BF965877, BE620438, AI758445, AL046944, AI249389, AI242246, AW163834, AL1119791, AI357599, AW078767, AW827102, AI860830, AI886055, AI301710, AI963846, AW089405, AW149221, AI570966, AI571699, AI433611, AW025279, AI582240, AI500061, BG032919, AI453248, AI620639, AI434242, AV750565, AI917994, AA464646, F32537, AI886123, BG107844, AA838230, AI689614, AI812015, BF033757, BF793462, AI241741, BG109164, BG110577, AI439452, AI537677, AW172981, AI679550, AW104141, BF814449, AI929108, AI950877, AI682121, AI686589, AW166937, BE047691, AI818358, AI566430, AW079432, BE879108, AI184903, AV756794, AI623682,

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					AB007812, AF026124, AK025113, S69407, AL133565, AL389982, A03736, and AF019298.
HNFJH73	199	986165	1 - 2951	15 - 2965	AL135307, AV705200, BG113555, BE893152, AU140178, BE275933, BE894324, AI934515, AA716409, BF060791, BE299687, AI677871, AW954275, N29134, AI808415, AI621031, AA582436, AI923237, BG179963, AA700347, AA463830, AA825773, BE393064, BF219349, AU158345, AI831482, BE893515, AI829698, AI354807, AI041945, BE208699, AA831207, H14671, AA906989, AA460265, N29562, AA679105, H07010, N29294, AA664218, BF438401, N26851, N20226, N21171, R66676, AI147747, BE567629, R53048, AI969497, AA953469, AA976405, AW206458, AW373029, AW503770, BE407841, AA224344, BF111112, Z44255, AA878064, H54297, Z44642, BG006488, AA303163, H05459, N42173, AI206338, AA219130, AA503077, T29413, BE551030, AI805791, R53135, H54374, BF110041, AI970159, R67394, AA384950, R37379, H68011, R73097, AI081796, R68165, BE302777, AW411287, BG119446, AA918529, BE314959, BF988929, AA369756, AA295590, AI927476, R14630, Z39579, R73098, AA960999, H60931, BF212051, F01802, F03399, R13469, AI565718, BF976822, H10504, AA137020, AW590683, AI652433, F03681, BF571534, C15517, F05530, AA136924, AA369755, T49871, AA341117, H60845, W93139, AA010506, BF344411, H67688, AI253282, AI825058, T49872, AW798336, AI185461, AA026121, BF701801, AA026205, AA722157, H14581, AA301189, AW411286, BE220882, R52710, BF700338, AW084882, AA219513, AA932778, N39964, X96375, X76184, AY004174, AF075706, AF075708, E06025, E06024, D12765, U35622, U18018, X63190, AF095890, X96377, and X96376.
HNTCH03	200	986328	1 - 738	15 - 752	AI631653, AW514704, AI683239, AI762458, BE544805, AI952420, AI675981, AI926932, BE536677, H48459, AA780363, R99152, AI049877, AA626759, AL031672, D80008, AP001712, AP000466, AL009051, AC005156, AC006006, AC002115, AC008745, AL121825, U91323, AC025030, AL133244, AL161938, AC007883, AP001630, AC016612, AP001748, AC005531, AC004386, AC002418, AL031597, AC005840, AL159970, AC008747, AL080242, AC002978, and AL031651.
HSUAA20	201	986744	1 - 2257	15 - 2271	AU125631, AU122638, AU124434, AU119564, AL521525, BG108961, AL523942, BG035161, BG251944, BG036436, BF796027, AW853573, BE898956, BG256538, BG119012, BF971387, BF038129, BF665538, BE178302, AI589375, BE292972, BE897915, AW853577, BF983057, BE178464, AI720743, BE743787, BF698180, AA576889, BF344035, BE074977, BG120570, BE074978, BE542431, AU125797, BE074983, BE927446, BF028723, AW664254, AI924017, AA622618, BF699259, AW853635, BF664182, BE773949, AV734594, BE674801, AA780625, BE764622, AW602743, BF751549, BE927448, BE773962, AI632995, AW602746, AI831228, AA127994, AA632633, BE675358, BE855875, AA830571, AW517313, AA460805, AW513297, W80991, BG029093, AA741398, BF082772, AI571048, AI141113, AA946941, AI984475, BF432650, AA652978, AI672687, AI190250, AI678469, AI092182, AA845782, BE927450, AI936315, BF334264, AI075287, BE932015, AL523941, AI597847, W81093,

					AW104773, BG056516, BF740090, BE251299, BF919259, BE773964, AU128580, AI884832, BE932029, BE171973, AI523288, N70538, AW886360, N69034, BF361037, AW071518, AL121348, BF945741, AW801680, BE927444, AA143051, AW801696, W68118, AL120946, BF904452, BF955068, AA807897, BE245676, BE086998, AA765885, AA535606, BE927436, BE778072, BF093541, AA076360, BF373538, W67691, AA663749, AI052509, W27647, AA143250, W00664, BG108992, H83325, AA676456, N93793, BF839013, W05851, AW651747, BF349236, AL521526, AW853630, AA177087, F06727, BF093544, BF229679, AI174288, BE773961, Z39753, AW351657, AI907303, W04331, BF760988, N95782, BF088904, AI253764, BE940308, AW801632, AW021876, AW799691, T79592, BE773988, BE773978, W28688, N67074, AA627487, N92965, C00490, BE773999, AI557470, BF740748, BF743310, T79674, T80951, AA629900, AI695168, AW009552, BE773994, W24896, T87240, BE816249, BE259711, AA368874, AA248274, H56269, AA908719, BF088933, AW403744, BE773973, T29748, W21422, BE927447, AW407237, AW075348, T05740, T24051, T87157, AW361232, AA056364, N74166, BE773977, BF356669, BE175576, BE773987, BE773997, BE773995, W68233, BF088932, AW853634, AA991598, H04126, AU127165, BF740840, BF364217, BE773947, BE177132, N84336, AW753242, BF832460, BE773984, BE810833, BF945806, BE841985, BE696002, T25762, BE931899, and M63488.
HSPAD08	202	986767	1 - 1213	15 - 1227	AW193875, AI859472, AW512687, AI298658, AI683140, AW510341, AW189037, AA075515, AI352215, AA293804, AI634702, AI972816, AA451904, AI204509, BF111273, AI680769, AI206090, AW170346, AW102571, AI491895, AI683354, AI683449, AI800229, AW105621, AW517880, AA628896, AA972922, AI131418, BE393771, AI269897, BE898899, AA477548, AA534766, AA496431, AI128837, AA555137, AA477050, AA563656, BF446212, AW054677, BE208245, AI972158, BE394824, AA432228, AA291675, AA719455, BE394667, AA496562, W67669, AA433859, AA936665, AA452084, AW003747, AA704365, F02471, AA688358, AA292518, AW166518, AA828939, H50634, AA603048, AA075256, AA078977, AA025750, AI609687, BF750539, AA010660, BF035171, AI955963, AA287213, BG150710, BF061263, AI087799, AI459028, AA428593, AI932457, H50635, BF223547, AA284324, W67668, AA327201, AA506658, AA476938, AW772554, BE674284, BE694854, AA722190, AA507349, AI540421, AA010659, AW189604, AA290981, AA969241, AI685657, AA025902, AA406009, AW088425, AA477670, AA402537, AA477179, BE001672, BE382381, BE746798, AA394184, AA477553, BE931271, AW749395, AA290980, F02231, AV705972, AA402896, AA401329, T28367, AW207468, AA079060, AI521428, BE515017, AA477665, AA335459, BF883518, AA405299, BE001677, AA385556, AW779288, AA403038, BE001587, AW467094, AA411029, AA411533, AA908550, AA293236, AA385354, AI963250, AA402928, AI130774, AW995301, BE816517, BF877343, BF877245, H53726, AL031663, AX014329, and A18924.
HFKBA32	203	987018	1 - 1853	15 - 1867	BF310989, AA779683, AA778834, BE671061, AV751426, AI055953, BG257892, AI609802,

						AI860306, W27660, R52806, AW195940, AI380154, AV752306, AI174219, AI422421, AV753926, R44985, T19342, Z45051, BF313622, N50668, AA699401, AI912462, Z40782, AV754072, T32252, AV754907, AA716140, AI382444, R20199, AW519215, N50758, BF831401, BG153108, AW748527, AL449781, AL449783, AL449725, AL449782, AL449784, AL449726, AI202657, AV702148, AL121740, AL031652, and S68401.
HHFLU49	204	987071	1 - 1380	15 - 1394		BE792620, BE019329, AA485440, BE793998, AI469092, BE205890, AI191926, AW194434, AI184921, AL035775, AA455208, AW079362, BE269697, AA485606, AI089456, AI332821, AA630354, AA490222, AA454866, BE677870, AA744740, AI392667, AA856590, AA401195, BF529066, AW473066, BE798034, AI825496, AA352810, AA282213, D20119, R85135, AI564870, AA282165, AI453191, T28579, AA348281, R85086, C02583, BF813606, AF245447, AC022154, U48213, and D28468.
HOENX16	205	987112	1 - 3893	15 - 3907		BE891680, BE178297, BE178296, BE178286, AI268332, BE670810, AV707583, BF195477, BE177969, AW951402, AW958955, BE551841, BF445193, H97932, AI741806, AA778568, AW157094, AV646610, BF448214, AI268370, BE551065, AI702945, AI424098, AW451803, AI692508, AW167867, AA628493, BE044558, BG116437, BE218339, AI598189, AI654033, AV653817, AI817262, BE220165, BE467572, AA971551, AW043615, BF109315, AI936744, BE219699, BE219449, AI819358, AI057105, BF448042, BE178117, BE168027, BF434998, AI887913, BF514130, AW119000, AI459272, AW025400, BF434156, AI703246, C06099, AI689853, AW149578, BF058188, AI791586, AI417870, AI420664, BE178000, AA283186, AI703125, AA394164, AI366783, AI377829, BE178101, AW149393, BF940116, AA464856, AA483691, AI951466, AI371041, AI422898, AI566539, BE219820, AI371032, AI199202, AA583355, BF058198, AI089906, BF116136, BF115258, AA977253, AI146316, AW197103, AI094921, BE326470, AA971743, AA994584, AA044947, AI075961, AI393161, AA044943, AI202319, BE327284, BE669883, AI589590, AA972772, AI632940, AA628533, AW341013, AA629360, AI215842, AI039295, AA532381, AA931937, AI076496, AI081377, AW003065, BE856431, AI299481, AA932867, BG149327, AW079999, BF436113, AI376081, AI222964, AI362071, BF061630, BF434279, AA427892, BF115881, AA618566, H98616, AI911958, AI080656, AW028722, AA628503, AA884934, AI184689, AA433882, AI357324, AA405766, N33018, AI356893, AW341785, AA934413, AA434383, AA513037, AI673829, AI376275, BE671351, AW771579, AW152313, AW104344, AA453341, AA994794, AA730790, AI139706, AW163063, BE672575, BF514498, AW139974, AW450904, BF732982, AI560166, AA992454, BF437946, AI268743, BF058175, BF732363, D52937, AA759378, BF448255, BE564373, BE766897, AI350218, AA292346, AW969749, AW263630, N99650, BE219748, AV646822, AI094082, BF431731, AI268578, AA452493, AA577028, AA484850, AW051780, BG149815, AA405847, AI279152, AV723873, AW015816, AI279039, AA230021, AA482694, BE504543, AI383225, BE672185, D62553, T75442, AW966446, AA384817, AI143652, BF514961, BE858120, BE972813, AA001089, BE222561, AA228265, AI205651, AA829807,

						AA332060, BF229130, R80152, Z36959, D44840, AI692586, BE709287, AA668713, AW028893, AA935871, AI311975, AI313288, AW951403, F13013, F10610, AI910420, AI379372, AA516076, R73731, R73650, AI348747, AI610907, BE180375, D62481, BF438546, AI611925, AW297589, AI784325, D45510, BF054671, BE502727, AI671347, AA621928, BE180154, BF886759, BE180152, AI351256, AA745667, D62330, AI371476, AW451761, BF054866, AL022726, U28368, Y07958, U16153, X75018, AJ001972, AF077859, AJ001971, AF030295, AL133390, AF085889, R20393, R43511, R43511, R80886, N71679, AA001053, AA149057, AA464151, AA730651, AA923038, AA934400, D79281, C20741, AA410247, AA410595, AA410596, AA436359, AA454080, AA480072, AA482617, AA709262, Z42701, AI469058, AI188065, and AW297335.
HTFOW71	206	987165	1 - 3700	15 - 3714		AU118585, BE875298, AV682483, BE708209, AW965424, BF031382, AA908770, AW194236, AA863229, AA292918, AI140754, BF130541, AI921186, AW188519, BG149424, AA878230, AI828605, AW975392, AW875556, AI949757, AI803722, AV749448, AW474515, AW474470, AI014812, AI373797, AU158313, AA526126, AA809213, AW273542, AW191931, AV715119, N62972, AI914731, N50836, AI784523, AA935043, AV681975, W04335, AA741240, N79876, AA814785, AW876605, AI000955, AI096936, AA767593, AA827102, AW876602, AW023275, AI014777, AA480539, BE007133, BF961785, AV659835, BG026599, AI358045, BF367902, AW340779, AW379327, AA280431, AW393163, R88194, AV749193, AW516924, AI095334, F17499, AW972832, AA527642, BE765701, AA334408, AA745802, W03745, AA252969, AI241826, W03727, R33831, AA745278, BE173119, R75838, N73949, AI361182, AV749201, N55158, AA096078, R75839, R33832, BE007129, N74169, AI934211, C02132, AW373395, AA253011, AI571875, AW015268, AB018256, AK026643, AK023740, and AF121862.
HTTAG03	207	987262	1 - 1291	15 - 1305		AU130318, BG259774, AU125274, AU128855, BG256568, BG177060, BE257156, AU129041, AI700706, BG024376, AW364136, BE548336, AU128166, AW386043, AW601873, BF525772, BE019700, AU132416, AU127646, AA291324, BE905471, AA179587, AW503906, AW996355, BE747534, BF087827, BE709414, AW197058, W26424, BG257764, R81308, BF754332, BE256391, AU133402, M85963, AW993840, BF754246, AU125115, AW386030, AL121131, AA207003, BE390411, AA332904, BF736085, AV724551, AW373274, AU123386, T09019, BF932018, AU133513, T31784, AU132106, N77135, AU142640, AU128923, AU130530, R18813, Z43001, AU129525, BE694459, T34189, AW975891, F12246, T34191, BF085466, BE719825, BF376318, AU128888, BF968290, BF928373, AW163398, AA985239, T77416, T30644, H14655, BE171681, AA333145, BE887490, BG004439, BG001543, AA972641, BF895334, BG112027, T30285, R34764, R20971, AW503416, T65268, AU132457, BE719079, AV706679, BF895331, H19179, BE295342, BG252015, BE161948, AA156130, BE007849, BF845158, AA429537, BF514515, AU126430, BF929781, AV756829, W96495, BF841516, AA218823, H87691, AA082864, AI989432, AW843600, N56845, BF761493,

					BF899121, AI003240, T78660, BE002101, AA525285, AW340165, AF017085, AF043220, AF043219, AF036613, Y14946, AF038968, AF038969, U77948, AF035737, AF038967, AF015553, AC004883, AC005098, AC005080, AF267747, AC004166, AC008267, AC004867, and AC004878.
HNTNN89	208	987577	1 - 1774	15 - 1788	BG031718, AW513358, BF976544, BF438157, BG032811, BF331293, BG024716, W79562, AL535366, BE884963, BG117015, AI015417, AA195361, AI168363, BF888337, BE736684, BF898627, BE252727, BF092574, BF026987, BF092380, AI313235, AI186042, BF869862, AW803215, BF835770, BF689427, BF002648, BF842552, F01241, BG256421, BF805719, AI460203, BG030479, BF309323, BG256560, BE763786, BG031518, BF922507, AW498536, BF882825, BF988866, BF182880, BE733066, AA452576, BE702993, AW601526, BF027104, BF882823, BF083180, AA195362, BF814079, BE314540, AA343903, BE799669, BF229237, BG257848, BF812714, BG007737, BF229214, BF829579, BE771762, BF827229, BE781509, BF346947, BG003854, BE747136, BE933685, AW499012, BF527029, AA248724, BE899626, BG030023, BG164309, AU141520, AI075687, AW498552, BF025833, BF900113, BE173877, BF912681, BF313647, BF954395, BF757992, AA577565, BG256431, AU118535, AI795846, BE140733, AI795807, AI795845, AI834271, BE140756, AI795820, BF766160, BE278426, AI795809, AI816586, AI816599, AI795804, AI795835, BE140737, BE140735, AI795812, AI795806, BE140736, BE839312, AI795802, BE811847, AI795830, BE772922, AI834270, BE140734, BE140738, BE694678, AI795853, BE140757, BF923079, AI795850, AI795844, BG031631, BE273730, BG176632, BF894840, BF981708, T12220, BE560871, BF348639, AA932665, BE140785, BF851195, BE777506, BF357970, AW177740, BG177284, BE889126, BE294313, BF984543, BE140782, BE707376, AA554454, AA706989, AW845338, BF882819, BE769206, AW580354, AW177756, BF966485, BF375580, AW581253, AW732883, BF203759, AW732860, BE616578, BF923384, BF842532, AA452754, AW607309, BE769218, AI834266, BE168455, BE814247, BF089125, BE082661, BE769200, BF510367, AI905996, BF972638, BE275901, X51466, Z11692, AF079098, AF079099, Y07504, U17362, M13708, E01155, U89415, X15337, X15335, X15336, X13988, Z34849, AC002347, and X04267.
HRADQ96	209	987636	1 - 799	15 - 813	AI347165, BE674960, AW262846, AL524881, BF590769, AI479150, AL524880, AI765046, AI954702, AI862166, AW341529, BE671360, AI979234, AA425381, BF222205, AW271374, AI498382, AI350299, AW207600, BF445305, BF939315, AA971011, AA045629, AA047515, AI675480, AI952656, AW136682, AW886735, R94308, AA135217, H92097, AI364888, AI566024, AA676245, T67202, AA885307, AA459915, AA460100, AA906376, AA935669, AA399986, BF590005, AW518625, AW769577, AP000503, AL132713, AF134726, AL122094, AJ245661, and AA401402.
HLDCJ16	210	987808	1 - 955	15 - 969	BF110739, AV704400, BG119539, AA905643, AA011185, AW975682, AA730907, AA736634, W70279, BG116516, BF914127, AI751939, AW963708, BE734515, AI242625, AA374275, AI148822, AX046526, AX046525, and AB023209.

HCOPH23	211	987900	1 - 591	15 - 605	AV729764, AA489568, BE938598, BE535256, D63283, AW177206, AA992072, BE843894, BG108043, BE865610, AW592116, AW996479, BF920145, AW996421, BF666980, AW996637, BE568865, BF216333, BE929243, AW950983, AA355341, BF036942, X89478, and A84106.
HEEAQ78	212	988159	1 - 609	15 - 623	AI203969, BE296775, AI694104, AW006595, BG259789, W19306, AI202279, AW117484, AI244102, AA360001, D31227, AW173045, W30958, D31245, W79314, AI968556, N27070, D30986, W87555, AA099257, BE550156, AI588983, AW204247, AI366748, AI805886, AI138445, AI313140, BE468140, AI458728, AI275451, AI279857, AI674281, AI431916, AW664610, AI928380, AI269434, AW303460, BE674620, AI803131, AI867122, BE221203, AI925957, AI435892, AI767332, AI218515, N99243, AW770741, AI279859, BE670348, AI379346, BE465388, AW663406, AI265771, H85592, BF110468, AA464584, AA909667, AI073818, AI243233, AA502751, AI804773, BG009489, AW779926, AI697614, AU145024, AL121250, AA889681, AC005746, U28049, AF244917, U15566, and AK001031.
HOFNY16	213	988363	1 - 1198	15 - 1212	BG164515, BG111223, BF112285, BG026284, BF684158, BG112559, AI741360, AI028092, BG027394, AW054930, AA843208, BF112117, BF106122, AI885734, AI086570, AA779766, AI149382, BE465615, AW131854, AI589032, AI761580, BF970936, AW338608, BG028559, BF594649, AW957967, BE535650, AI221082, AI538973, AI457118, AW305001, AA224194, N32622, BE857341, AI332782, AA574231, AW166459, AA502344, AI446132, AI333381, AA918408, BF700624, AA843391, AI188410, AA911794, AA694111, AI128450, AI017450, AI183618, AI695163, N71175, AI359210, AI362223, AI076169, AI373833, BE645009, AI969702, AI679434, AI679944, AI632818, AI751761, AA464068, AA677764, AA262544, AW611909, H98169, AA316805, AA224296, AI351595, H46974, BF939054, AI094637, N29775, BF000254, AA191432, BE439725, H99191, AW008944, BF317333, AA261907, AI654665, AA766635, AA629945, AA345802, N49576, BF941630, AA513768, N21971, AI469939, AA731203, AA627622, AI222668, AW627836, AI128771, AW206264, AI678337, AA463932, AA526189, AI535798, AA526159, BE615345, BE615934, N24474, AA781062, BF373261, AA766011, AI004436, AI249345, AA027991, AA366773, AA344096, R10708, AW131678, N28580, W19349, AU156209, AA333690, N47841, N57194, AW337311, AA027990, AA618114, AA861099, AA508759, AA780171, AA355540, AA508773, AA528039, AW972443, AW972641, AA535956, T25759, BE770747, AA918251, BE164977, BF997435, AI687527, AI749060, AW197976, H83283, AW104117, AW866581, AW866501, BE841187, BF374341, AW969030, BF001680, BF792390, H61031, AW866266, AW132056, AI590043, BF812960, AI433157, AI702073, BF812961, AI950892, AI635942, BF812938, AW827289, AI114703, AI280637, AI648454, BF970652, AI435253, AI633125, BE047852, AI445611, AL514717, AI569583, AW366372, AI698391, AW129659, AI635461, AI888208, AI862139, AW168650, AW026882, AI491775, BE964614, BF724198, AI431975, BF814453, AW251034, AW051258, AI536685, AI802542, AI818980, AL515191, BF816042, AV729953,

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HSLCX45	214	988441	1 - 1594	15 - 1608	AU138309, BE378723, AW954529, BG170125, BE407482, BF345314, BG110266, AU126439, BG252087, AI207589, BE538230, AW370396, AW514900, AW614778, BE873057, AW370434, BF968320, BG257066, AA166771, BG112058, AL525443, BF346757, BG118689, BE545196, AI808550, AU128363, AI076009, AW748425, AL135589, AA167097, BG167568, AA430610, AI825617, AW796311, AW182707, AW748427, AI026641, BG163741, H51991, AA975592, AW995303, AI264089, AA430525, AI372496, AA297731, AW573289, AI219300, AA322231, Z45337, AI080168, AI766072, BF727366, AV696797, R76072, AA384673, W24461, BF445015, AI806968, R54168, AA296920, BE171602, BF894766, BE171603, R82603, AA294943, AV692839, AA310705, AA632404, N42674, R14396, BF726113, BE892010, AI865128, AA824553, N32458, AA356894, AA166959, AI609522, AA166910, AI253143, BE162789, BF351162, AI924986, AA444136, AI075198, W05098, AA385099, AW374839, BF516243, AI248101, AI805883, AA582768, AA809507, AA731343, W44721, AA862207, R56252, AA826145, AA573521, AW407346, BG028788, N92283, BF445409, W38624, AI373279, AI150941, AI655627, AA889359, BF439835, AW613357, AI304379, AL133843, AI143202, AI767348, BE671632, AA055559, AA400410, AI826612, AI655656, AI433399, AI361012, AI214658, T32981, AW513581, AW513568, AW772436, AW130640, BE670317, T19107, AU150661, BE220152, Z41049, AL524537, AA700295, AA001677, AW768493, BF726112, AA730248, BF196078, AW511016, AI693099, AI693113, AW150675, AA948601, AA450020, AW081598, AA947191, BF515680, AI826592, AA031305, AI693090, AW748435, T93242, AA436536, AA526868, BF034090, R82604, AA826163, AA669789, BF591968, N48257, BE550159, BF589688, T93135, AW051111, BF754254, D79627, BF184824, AI887184, BF448111, BF893582, H30152, AW844424, BE972243, BG178888, BF934121, AA180040, N35415, AA555145, AK001437, AX010197, AB006572, AF091095, AX010199, AP000693, Z82196, and AI916220.
HLMJB09	215	988499	1 - 577	15 - 591	BE791453, BE266718, AI831454, AI478449, BF204533, BE728534, AW872373, AI366669, AI280407, AA306735, BG149615, N93873, AI268479, BE669813, AA465678, BE550202, AA912151, AA394238, AA972278, AW138759, AA310901, AW004693, AW008896, H96033, AA576640, AA292385, BF307199, BF511769, and AI074225.
HOVEF60	216	988526	1 - 1429	15 - 1443	AA863120, BF732255, BE326946, AW298244, AA017053, AA435512, AW295622, AW295626, AI951643, T53592, BE939132, AW294754, AA393547, T53591, AV699140, AA969193, R05527, AI085442, AA372985, R22075, AL160237, AC022137, AC011452, AC010636, AC002097, AF072711, AC006452, AL022326, AC008469, AC005520, U82670, AF176315, AL136969, AL365217, AC008770, AC005057, AC073316, AL133258, Z97054, Z69387, and AP000344.
HOGDR72	217	988536	1 - 530	15 - 544	BF967495, BF211711, AW327285, BF526862, BG025286, BF979085, BG027660, BE251902,

					AV762304, BE260454, BF129885, AV741191, BF681456, BE907272, AI884918, AI095756, F30101, BE254907, AU126691, AV714954, AI827092, AV743251, AV710585, AW732886, AI344424, AA584218, AA744890, AI300848, W16526, AI748804, AI857538, AI264687, W47377, BF792830, AA040213, AA609680, AA937134, AV745024, BF681171, AA557625, BG231394, BF239199, AI188746, AV721211, AA855009, AV715743, BF686712, AI033767, AA420847, BF965251, AV724057, AI312889, AI342092, AI392941, AA707599, AI573264, AI298244, D61196, AA707532, AI338594, D20757, F24231, BF447322, AA650234, AA758576, N29939, AA468938, W05637, AV751983, AA313977, AA683534, AA469013, BE868256, F19198, AV737070, D51524, AA420429, AA657493, AI749529, AA335917, AW008966, H10544, AI131360, AI037998, BF240779, AI751883, AA313970, AI051789, AI159957, W47378, AA523187, AW026532, BE887794, AI857469, AA657513, F24557, AA146866, AI720892, F36863, F28793, W32886, AA146867, AW007089, BE672619, D81191, AA968838, BF337165, D51520, AA889941, BF954574, BF209878, AA632059, AA576811, AI300706, T79725, AV739817, T68141, BE812441, R73094, AA339720, F19462, BE073352, AA724959, AA961393, AI336135, AI138721, F27913, T30336, AI204128, F31843, T32200, AA568145, T36073, N74191, BF210913, T67995, T92099, T71446, BG254284, F34123, AI749424, D56154, BF954482, AW884243, AW939886, AA083105, D81173, AA313992, W35155, BF239376, AA471133, AW631265, BF572665, T31892, BF131513, D81247, W04355, BF572508, AW327625, D81378, D52437, AA082542, D52443, D59501, AW793583, AA083106, T24841, C03173, BE972561, W05779, R29137, H89590, D53867, BF799254, T35945, D52190, AV737705, AI936104, N92532, AA630017, AA040193, AA922437, AA382273, AI161393, F22684, AV741683, AA996319, T36223, F29277, AV719994, AA721470, AA622177, AA040194, BE073240, W38814, AA382638, BF840821, T77354, H24146, BE907742, BE073229, BF588473, AI191983, BE905959, BF431001, AA633270, BF572727, AA860915, AL046356, AL041862, AL079977, AX017269, AR022287, AL138958, L42855, AR022284, AC004493, and AC005570.
HOCMF20	218	988556	1 - 1296	15 - 1310	BE514634, BG256857, BE870314, BE537227, BG107758, AU157540, BE379227, BG180584, AA039903, AW957081, BF666246, AA041527, BF223913, AI088688, AI452952, BE463637, AI768938, AI354883, AI569996, AI168582, BE746240, AI189869, BF930629, AU138248, BG167829, AA214649, BF897138, AW613854, AI086670, R70656, AW262560, AA906264, BG176733, AA862839, BF992831, BE613477, BE614226, BF772857, BE741553, AA369318, AA398795, AA334622, AW749053, BF979310, BE541549, AI990089, R01145, AA367593, AI990659, AA379173, AL449915, AI886597, AI024032, AA435840, AA670197, AA847919, BF195634, AA248230, BE707671, N81095, BF196800, AI476295, AW818630, BE677063, AW630122, AW582595, BE072906, BF899151, AW818433, BF928637, AA211075, AW582587, BF877092, R05760, AW858854, BE964371, BF773525, BE937222, AA079305, BF799977, BF982105, BF988362, BE927423, Y10043, AF003626, AX012194, AX011713,

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HAMHH26	219	988737	1 - 915	15 - 929	AU128934, AW295223, BE464400, AA991499, BE896488, AA350115, AA862497, AW803075, BF307480, BE771630, AI565361, BF305159, BG035692, AU143667, BE888160, BF308892, BG167064, BF316003, BG105910, AL533676, AA689522, AL527443, BF310865, BE561846, BE902727, BE250595, BE562560, AI970905, AB014077, AC004209, AP000513, U63336, and Z63167.
HHFOX44	220	988904	1 - 951	15 - 965	AL526701, AL522456, AL532453, AL527039, AL523903, AL526253, AL528026, AL527184, BE313151, BF981949, BE382548, AL528052, BE382760, AL530393, BE563051, BF316765, AL525360, BE295221, BE395130, BF343372, AL522455, AW161570, AI752220, AL528025, AL523902, AI752281, AL532452, BF316189, AA780343, BE314081, AI751714, BE710678, BE312148, AL525320, AA838048, BF526000, BE262585, AA308676, BE735562, BE295717, BF340685, BE714898, BF206587, BF207314, BF875508, AL527163, BE383255, AA532924, BF312104, AW160787, BF342085, BF206655, BF338128, AL524678, AA443563, T61701, AI750244, AW605824, BE792522, BG026032, AA327814, AI815410, AA042827, AI460348, AI365667, R19505, A09809, X16302, M35410, S37712, M69237, AF074854, S44612, AF120326, U21117, AC007563, M69239, S37722, and U21118.
HPWDE54	221	989029	1 - 4052	15 - 4066	AW857689, AW276231, BE551292, BF308481, BE299013, AA490201, BE670363, BF669630, AW005386, AV716271, W58532, N34876, H49263, AI989984, BF380965, BF351245, AW604667, T65325, AA316606, AI632927, AA284855, AW175932, AA456691, AA479509, AA284772, BF882124, BF754718, AI332652, AA479512, AI344533, H20606, BE502863, BF527371, AI025009, AI914188, F11769, AA449658, BF093603, AA992445, H14740, H69342, BF329858, H78105, AA065099, BE220691, AW003734, R91727, BG015459, AW468776, AI239843, BF333777, AA411443, AL135088, AA235153, AI651557, BE048365, F35147, BE311701, BF803133, AA479511, AW080475, AA689564, AI093007, BF329815, AI367837, Z41915, AW051387, W24995, AI613126, AW975318, AW383213, H82282, H24463, BF761251, BF834044, N55797, BF761000, N39880, AA284683, AI582820, AW444888, BE326218, AW002105, BE768127, AI350138, AI681729, H60265, BE940320, BE326820, AA284567, AA815230, AA476964, BF911584, BF909991, AW183890, AI241032, W46875, AA084319, AI633647, H94957, AI262918, AI022584, AW005596, N43950, H82389, AI683444, AJ252060, and M85156.
HNOAX46	222	989183	1 - 2741	15 - 2755	AU119537, AU134978, AI064858, AI064875, AW007726, AV703643, AU127757, AI694749, AI819136, AI887756, AI869305, BE885171, AA600798, AI887625, AI628095, BF061377, BE348369, AA723035, BF525409, AU148211, AI203615, AU145850, BE178344, AW169246, AI523583, AI922660, AI589554, BE720104, AV722120, AI805580, AU148112, BG250310,

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HCQCB28	223	989280	1 - 1134	15 - 1148	AL520689, BE735404, BG112775, AI857685, BG167421, W19090, AI127950, AI093116, AI937245, AI498052, AA837396, AA931150, AA894527, AI077433, AA814942, AA729327, AA910659, AW405693, AA836412, AA564324, AI623269, AA846844, R16770, AA932274, AW854929, BF667815, BE208685, AI470094, T89616, BF754529, AI208399, N79612, AV756491, AW328331, AI625604, AI635440, AW370878, AI698941, AI282253, AW069227, AW969824, AW819125, BF725844, BF804385, AI687343, AI609972, AW968338, AL046746,

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HOOJB32	224	989321	1 - 2335	15 - 2349		AL515532, AA829751, BE748918, AW007550, AL515533, AU119923, AL518484, BF697251, AW978734, AA812215, AI333647, AA776760, AA479310, AA976233, AA765519, AA602624, AW978969, BF214666, AW893942, AW993668, BF726646, BF036225, AI619447, AW272900, AA143053, BF589461, AI832440, AA825905, AW271599, AW439208, BF981088, AA868695, AA632054, BE895236, AW607674, AA143252, W60553, N27545, AA255434, AW272364, AI886366, AA027768, AA766708, AI079161, AI963170, AI079664, BF132493, AI274767, AA938443, Z25256, AI803757, AA757112, N40361, AV699373, AW607572, T50699, AW607642, F00462, BE165952, BF130297, AA876224, BE560621, BE748396, AA294831, BF900791, AI698984, AA255596, AW572264, AA805436, AA357727, T77071, BE896446, BF921133, AW964250, AA479413, BE542265, BF241063, BF576917, R80504, AI886367, AB007619, AF006265, AF076524, AL133353, L29555, AF059321, and AI168650.
HMWJJ35	225	989323	1 - 595	15 - 609		BF130431, AU148003, BF541521, BF668426, BE960616, AW955644, BF242464, BF242953, BF700182, AW592565, AL536954, BE737954, N39380, BF698754, BF214449, BF667459, BE565781, BF028162, AA640397, BE748478, BF238497, BF664849, W00920, BF665032, BF570721, AW976277, BF027869, BF664855, AA379071, AA329515, D80838, AL536953, BF695984, AA936496, AL109925, AK022419, AF254117, AF264787, AL137060, Y15228, Y15381, and Z57881.
HHFIA95	226	989396	1 - 3136	15 - 3150		AU118053, AI761722, AU133368, BE220681, BE904300, AA903124, BE218571, BE875326, BF110216, BG254952, BE393532, AL134516, BG105299, BG177247, BE885702, BE154897, BF037984, AI831473, BF574765, BF576023, BG260292, BE439745, AA604081, AA603455, AW629057, AI817117, AI694366, W80392, AI935246, AU144710, AA887227, BE154865, BG104770, AI076013, AA211611, AW168295, BF672060, BE154866, BF036585, BE154898, BF355599, BF671956, BF031143, AW769409, AW263745, AW977292, AA211683, BE075303, AU154716, BF215526, BF800037, AW086067, BE871344, AI281897, AI827407, AI244255, AI660036, BE789605, AI559254, AA044091, BF983298, AI122753, AA917034, AI637588, AI808102, R60765, W78970, N22921, AA393852, AI040177, BF229422, W56449, Z33451, AW771892, AI190898, AA547998, AW242400, AI188686, AI242430, AA604102, AA044281, AA765282, AV722457, AI338330, AA159042, BE880891, BF574179, AI338329, BF103937, BF219369, H18545, AI973242, BF105139, AA393851, BE891180, AA995784, R60253, AA569460, AA936280, F06764, AA993733, AA031985, AA541308, R67234, BF229418, BF802756, Z39821, AA173320, AW136432, N63356, AW316605, H51502, AA173319, AU124276, H02648, BF672600, Z26973, R81685, AI244925, AI016876, H18437, BF686307, AW265135, T54070, AI541355, AA565781, AW023057, R74303, AA856745,

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HSPSH36	227	989607	1 - 3341	15 - 3355	AI084794, AI079577, BE881652, BF339888, AU129623, AI860227, BF527871, BE902813, AW247256, AW149506, AI340349, AW165995, BE258548, BG120667, BE562875, BE671167, N49941, BG122408, AI937382, BE220476, AA114972, BE467738, BE872452, AI798846, AW043850, BG104282, AI660526, AW504750, AA053861, AA432275, AA034091, BF798185, AI310064, AI677900, AI587077, AA543064, BE045523, AW898148, AI693972, AI356444, AA845685, AI084913, AI140117, AW593208, BF111021, AI273445, AA431268, AA934875, AW248351, BF432911, BE670425, BE828110, AI221382, AI356446, AI160550, BE217783, BG112435, AI689824, BF110424, AI914318, AA953658, W73665, BE673799, AI359956, AI360429, AI804623, AW965712, AW205262, AI342370, AA620610, AA918736, AI279173, BG149447, AA041542, AI304417, AA515511, BF061408, AI565733, AI859179, BE674577, AW071018, BF061911, AI351605, AA001196, AA923717, AA706669, AI950177, AI566935, AI311478, W73617, AA007600, BF840585, BF061852, AA503205, AW014660, BF112260, N52723, AW303274, AA352018, AA961114, BF195300, AI480209, AI278673, AI916311, H38785, AA047595, AA136472, AI052140, AI298446, AA057216, AW043575, AI128768, BF446866, W68642, AI033091, AW665976, AA889932, H95052, AA747719, T66290, AI298975, BF773249, AI375774, AI703297, AI500368, H20393, BE327032, N99560, AI090578, AI023749, AA086083, AI275622, AA757794, AI452648, AI583232, AI568624, AW470278, W68641, BF978456, AI364086, H16275, H38686, BE831779, AI459176, H83993, AW149552, AW949838, AI422271, R05556, H12369, BE676655, BF197252, AI609045, BF055295, R19188, R87458, R05663, AI268656, T66343, H21010, N50155, R71281, H43161, R61162, R85142, AI918177, R73430, R71230, AA372029, AI268549, AI702648, H75726, R99486, BG165410, H12317, AA814517, BE645111, AI348485, R99485, AI500402, AA975326, AA976181, R31047, AI348329, AI083736, AI369621, AI568988, Z41094, H66760, AI479912, AA086084, AI970578, H22528, W35148, AA971720, F12147, AA760693, H19816, H20389, Z43042, AA016275, AA782921, R05664, BE044409, F08012, AW973038, AA927449, H94692, BF766588, AA019859, AW151197, R56553, R05452, BE762898, H20197, AW006795, AI457786, AW002114, AW247925, AI937423, AA725110, AW505065,

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HAAAA25	228	989952	1 - 1179	15 - 1193	AI680985, BG168038, AW945162, AW950652, AA554513, BE880730, BG170870, BE223010,

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HTEMJ16	229	990060	1 - 784	15 - 798	BF309104, BE559524, BE281458, BE385728, BE786863, AV756337, AA779378, AA806308, BF027226, AI955259, BG115810, BE257947, AI479643, AI201081, AA449114, AI523836, AW105647, AI371725, BF971945, BF037117, AI332998, BE791557, BE796212, AI832556, AI360813, AA812681, AI338226, AV733716, AA133351, BE795339, AI160821, AA417906, AA719870, BE744787, AI911189, AA652508, AA074869, AA677398, AA196804, BF685157, AA713507, AI028708, AA583945, AI949595, BE730232, AI804084, AV701912, AI272799, AI076158, BF684668, BE512992, BF037939, AA758900, BF686755, AI084956, BF667373, AI738876, AA593880, AA478598, AI081646, AA513306, BE793024, AA419554, AI192864, AI189240, W42538, AI401016, BF032897, BF207166, BF694324, AI242445, BF975403, AI094068, BF733159, BE878000, AA620875, AI188600, AA657626, AI274502, BF680048, AI187079, AA962082, BG176811, BF308448, AA463687, AA196803, AV744973, AI284416, AI224529, AA468047, F19538, AV709297, AA308585, BF244980, AI804825, AI871846, AA234166, AA234913, AA987467, AI127473, AI147167, AA187442, AA721050, AA233918, AI476030, AA234914, AA482379, BE698022, BE717214, AW795107, BE163110, AA463761, AA471119, AW873836, AA468083, AA872664, AA091369, AW844269, BE698050, AW844282, AI253673, AI220722, AA312835, AA969703, AA906776, AA229993, AA469001, AA468096, W31092, AA357299, AA318396, AJ003540, AW964407, AI687745, AA468927, AA720885, BF374556, AA628636, N44134, AA479333, AI186421, AA449548, BF955675, AA385197, AV742900, AW794203, BF797432, AA833536, BE833240, AA887208,

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HWLAB90	230	990146	1 - 2999	15 - 3013	AV714144, BG032179, AW970180, AW968919, BG166257, AA488919, AW193898, AI809235, AA975791, W91952, AI761005, AI670010, AI339783, AI033067, BF034415, AW130078, BG002378, AI859374, BE898684, AA873447, R56753, W67396, AA514367, AA468526, AW613857, AI272684, AW303839, W67251, AA614766, R97330, AI304566, AA574117, H56576, H10098, AA488848, H10045, BF367097, C00414, AI300710, AI767837, AA918651, AW080712, AI015068, R97302, AI219130, AA977641, H81286, AA721681, AW630124, AI244872, R56905, H81342, W91879, AA009655, AI358594, AI991374, BF987177, H56577, AA886283, BF056410, R25858, BE091015, AF067817, AF118887, AF118886, AF067816, AF140280, and AF035442.
HOSED43	231	990184	1 - 796	15 - 810	BE293450, AI416985, BG259922, BE250091, BE409947, AW976132, AA127077, BG036566, AW006165, BG255815, BE267475, AW403861, AW408474, R47317, BF878882, AA074323, AW842660, BF825561, BF879325, AA806524, AI037897, BF932189, AU156313, BE788042, AW752809, AW752712, AI753037, AA602557, AU156024, AA127078, BE245636, AK001851, AK023509, AL137818, AL356108, AL023755, and AK022251.
HNODF50	232	990254	1 - 1305	15 - 1319	AL517211, AL518669, AL518668, AL522147, AL521219, AL525965, AL521218, AL517210, AL526016, AL529841, BF310468, BE260926, BF528453, BF792486, BF968614, BE727867, BF969532, BE741455, BF968373, BG254612, BF206651, BE780582, BF315676, BE314740, BE778351, BF337363, AI052120, AU127936, BF967743, BG256216, BE794943, BE543980, BF037565, BE906194, BE778878, BF980637, BE618222, BE385237, BE907648, AI564007, BE250963, BE786495, BG036398, BE251987, AI539865, BE786563, BE264208, BE538552, BF239260, BE878498, BG118091, AW674383, BF313845, AW948987, BF669238, BF528446, BF125038, AW054769, BE262248, BE545571, AI921598, AA492511, AA587938, AI857898, AA633515, BF027253, BE697365, BF925551, AW341500, BF954735, BF977183, AI745475, BF954757, BE260934, AA769361, AA599303, AW956994, AI286245, AI274299, AW666003, AW958317, BE252135, AI252682, BE877011, AI382161, AI076260, BE618764, AI127273, AW190900, AA514755, AU150315, AW939258, AI906279, W73289, AA503533, BE777951, BF093632, BE163339, AW236251, BE266670, AW872807, AA653758, AA612989, AI440380, AI469422, AI271745, BF945505, AI873681, BF675437, BE967460, AA572935, AI910865, W73234, AW241946, AA804790, AI356494, AW674551, BG023980, AI208194, BE745501, BF528373, AI690448, BF724593, AW103110, BF994022, BF993923, BF991645, BF993922, BE972246, BF994018, AA806069, AA834818, AA305461, N30688, BF312335, AI289450, AW794720, AW794703, AA305936, BF993929, AA311372, BF677595, AA305330, F37016, BF993927, AW878217, AA654459, BF991629, AI215967, AA772577, H45301, BF803635, AW086134, BF994329, BF994316, H45074, R48780, H18284, BF994322, R78818, AA040670, W31677, AA708219, AA148170, AW340499, AW183355, BF993333, AW082264, BF993925,

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HLWBV17	233	990255	1 - 684	15 - 698	AI539865, AI469422, BG036398, AW958317, AI076260, AA492511, AI382161, AI921598, AA769361, BG118091, AI564007, AI052120, BE385237, BE777951, AI286245, AI252682, AI274299, AW054769, AW341500, BE545571, AI127273, AI857898, AI745475, AI440380, AA514755, AI690448, AI356494, AI271745, BE538552, AA599303, AW666003, AA612989, AI873681, AW872807, AA572935, AA653758, AA503533, AA633515, AI910865, AA587938, W73234, AW241946, AL518668, AW674551, AW190900, N30688, AI208194, AA804790, AU150315, BE907648, BF125038, AW236251, AA834818, AW103110, AI289450, BG256216, BF967743, AI215967, AA806069, AA148170, AA772577, AL525965, AA708219, R48780, AW086134, H45074, H45301, W31677, AA311372, H18284, AA654459, AW183355, AL521218, BE618764, F22269, R48885, BE743249, AA854391, AA040571, AI919387, F37016, H11318, AW948987, AL517210, AI215973, BE074790, AI684072, AA293184, C00180, H45378, AI918341, BF856284, AI871791, BF337363, AI342719, BF331401, BE769414, BF446856, H45041, AI206745, F25626, C03223, AW082610, AL518669, AW198148, AA143767, R73522, AA330825, BF856295, AA293185, AA810809, BE155766, BF570667, AW381772, AW582513, BE155779, AA458493, AL517211, AA551484, BE878498, AA904696, AL521219, AL529841, AI139866, AI633937, AA862050, AL526016, AA552564, U46271, BG150895, AA329184, W73289, AI809413, BF239260, AA664948, BF968373, BF746013, BE876454, AL522147, BE260926, N27632, AA225507, BE727867, BE251987, AW878217, BF968614, BE185060, AW340499, AW082264, AC010527, AF222742, AF038959, AF038958, AR048276, AK001416, and S45663.
HOCQH66	234	990435	1 - 3554	15 - 3568	AW385298, AW834944, AI801294, AL048012, AW385250, AL048318, AI147487,

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HOGDC67	235	990546	1 - 1875	15 - 1889	AL522719, AL530045, AL526479, AL515639, AL526439, AL515638, AL529665, AL521252, AL527656, BE797221, BE795409, BE798654, BE796334, BG252121, BE277057, AI608756, BE300022, BE513242, AU142632, AU117922, BF527825, BE561443, AU142525, AU122446, BE263145, AW301066, BE260541, BE798136, BE560713, BF527824, BE267445, AL522718, AL527657, AU124297, BF308205, BE877379, BF308460, AU132733, BE255304, BE265023,

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HCDBO02	236	990609	1 - 4074	AU118049, BF027266, BE897159, BF975497, AI690844, BE619812, AU116976, AI683350, AU123898, AI638817, AI299947, AW851296, BE619491, AW080261, AW003342, BG261217, BE550518, BF435624, BE540593, AW604148, AW604144, AU133706, AA923370, AW604156, AW604159, AI963937, BE903781, AW994444, AI355003, BG251375, BF795838, BE142887, BE898687, BG031003, AW503445, AW769245, BE391639, BG250064, AW593387, BE387364, BE735143, AW390271, BE538744, BE885670, BE885477, BG179338, BE548753, AW117969, AW513655, AI827494, BE281406, BG257886, AW589828, BE537306, AW264359, AU149292, AW604151, BF342540, BF591073, BE901079, AI570870, AA812088, BE166616, AU148669, AI372056, AI339216, AW367000, AI188999, BE148064, AA948067,
			15 - 4088	

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HODGN92	237	990611	1 - 492	15 - 506		AI114709, and BF515175.
HPDRP30	238	990751	1 - 2150	15 - 2164		BE736233, BE393462, BF979620, BG180451, BG031119, BE895899, AW015154, AI367256, BG250616, AW246035, BF589766, AA723883, AI339548, AI148428, AW518892, AI874244, AI339560, AW003788, AI653700, AA777268, AI261244, BE906120, AA847296, AW007179, BE293221, AW173770, AI346957, AI475948, AI143349, T65504, AI814098, R52652, AI339729, H39618, BE545311, F13535, BF980260, AV652617, and AL122073.
HBXFN09	239	990769	1 - 234	15 - 248		AA034059, BG169883, and AW998693.
HDTBO75	240	990913	1 - 455	15 - 469		AV752559, BE041424, AI374803, AV662297, W92499, AA431153, AW977181, BF439568, AA678183, AW834968, AW834907, AW837310, AA885002, BG028110, AA732329, AA732727, BF242398, AA432173, AW176741, AW580372, N55761, BF982207, AW241399, BF224093, AW970314, BF507800, AW970227, AA628895, AA766833, AA534395, N32238, AA347608, AW189247, R49979, N31980, AI650721, AI685214, AW511372, BG257682, BE549817, BG252929, BG167830, BG029667, BG113493, BF795712, AL039390, BF796402, BG261260, BG113712, BG163646, AL046681, BG178532, BG180295, BF968504, BG167093, BG114865, BF345716, BG111831, BF971261, BF965904, BG179586, BG111590, BG036465, BF968622, BG251851, BG165260, BG176936, BG104735, BG108452, BG035330, BF794212,

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HELGN26	241	991014	1 - 1609	15 - 1623	BF970582, BF971269, BG035858, BG170653, AA527442, BF032717, BG255093, BF684481, BE304332, BF312957, BE740090, AI651618, AI700966, BE616023, BF439777, BE218172, BG259712, BF223565, AW328638, AW081016, BE312971, BE218745, BE880967, AW965885, AV688930, BF110536, BF223349, BE616836, AI659341, AI492019, BF037137, BG011544, AI801971, AA653440, AI763063, AI362810, AI830364, AA602677, AI799940, AI590301, AA155644, AA132754, AI693639, AI538876, AA935812, AI913180, BE262105, BE220203, AW872403, BF431624, AI478310, BE502628, AI963163, AI049932, AI867018, AI445763, AW328637, AW237634, AI686646, AI093564, BF309857, AI355982, AV692290, AW004960, AW628274, BE676445, AW168151, AI720994, BE501936, BE677346, AI624773, AI038791, AI673720, AA777083, AI241965, AI083640, AW513233, R50466, BF962310, AI990564, AA121215, H30620, AA101514, W67379, AA778130, AW139256, AW514997, BE897897, AI540831, AI824615, R39429, AI291349, AW193446, AA114190, AI241095, AW193788, AW589519, AA132803, AI687589, AA358948, H28151, W31255, AA912622, AW591011, AI538118, AW075509, AW614272, BE349060, AA456143, AA780923, H46616, BF529857, W67264, AW235829, AI686256, AA308514, AI538723, AA706294, N91821, R38344, AI811489, BE833082, AW663952, AI862679, BF856265, AI478217, AW338623, T24735, BF981529, BE242914, BF970481, BE272808, AW953574, AV709660, AV709314, AV727029, AW951768, AV728518, AV696931, AV706417, AV656256, AV703169, AW954237, AV692691, AV708893, AV709390, AV728642, AV686064, AV660728, AV691080, AV661704, AV655280, AV659322, AV708381, AV727935, AV699089, AV706721, AV687035, AV655096, AV707753, AV708025, AV704269, AV726103, AV705280, AV698545, AV729220, AV726816, AV695545, AV701707, AV656283, AV701914, AV705159, AW945168, AV658863, AW955012, AV727787, AV654908, AV652001, AV651955, AV696866, AV725920, AV704234, AV702516, AV709407,

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HODCU15	242	991048	1 - 3173	15 - 3187	BE782829, BE166336, BE893914, BF963846, AI637581, AI635627, BF956699, AW615337, BE892490, AW081066, AA398002, BF246643, BF959925, BF943255, BF352768, AV714386, AA399078, and AC046129.
HOGDI51	243	991268	1 - 962	15 - 976	BE745148, BF314775, BF313468, AW972065, AW160403, AA190647, AI468027, AA732363, AI568476, AI815528, AW015158, BE315222, AW958765, AA725374, BF446080, AA668784, BF313148, AA058590, BE741366, BE261839, AA021327, H92735, AA627547, H96373, H85956, BE843878, BF058863, AA973647, AA018467, AI240617, AA383496, AW439263, AI925892, AW162022, BE694410, AI739208, BE694382, AI336026, AL044942, and AF007872.
HLWAF02	244	991516	1 - 569	15 - 583	AA421538, AL525449, AU153711, AW964455, AW964457, AU148695, AU149818, AU147714, W72446, AI004165, AU159170, AU151493, W31068, AW874565, AA295338, AW269624, AA577265, BF764205, AW732171, AV702593, AI863050, AW003851, AI190446, BF843436, AA417216, AA483528, W74385, AW748748, AA318970, BE795181, AA872030, W76345, H26877, AW384040, AW517019, AW884747, AI469697, AI370275, BF892944, AI017646, AV690726, AL036104, H99624, AV689538, AV698770, AV691815, AI421770, BF591512, R94006, BE782006, AV689959, BE169392, AV689985, AV689953, AF004539, Z41369, F09802, AK023231, AK001371, AK026645, AB040885, and AK023160.
HRKPA16	245	991654	1 - 625	15 - 639	BG259737, AW194396, AA143418, AA404619, AI608754, AU154417, AI374988, N63618, AU149063, AU152646, AW966669, AU152215, AI038547, AA443610, AI690852, AA427421, AW339887, W60354, W59988, AW118447, AA349493, AI445343, AA461548, AW993204, AL121201, AA946641, H59011, AI014721, R98999, AW103224, AU157188, AI357842, AA927255, AA843235, BE467545, T64658, AA887129, AA354545, AI811399, AW072161, H21841, AA805567, H88125, H49591, AI279415, BF912456, AI621314, AW593607, AU148527, AU157952, AA665881, AW468541, BF947706, BF084343, T24715, AW406139, H88124, BE174405, AA640305, AW021674, BF914416, AI754257, AA493464, AI572680, AA610644, AW051097, BF747303, BE328286, AA177130, AV651424, AA493245,

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HPDQX94	246	991761	1 - 776	15 - 790	AU133068, BG109770, BE791999, BE260010, BE909913, AW195742, AV707197, BE312976, AV703890, AI088522, AW188226, BE393159, AA122237, AV751642, AA443448, W73858, AI741099, BE857070, AA724376, BE887952, AI421427, AA932230, BE073185, AI357586, BE512839, AI016288, AA115940, BF315243, N41317, AI423297, BF196664, AA843244, AI188255, AA770683, AU154475, AA913450, W73826, AI138932, N90753, AI913753, AI038148, AI127837, AI088260, AA781597, AI144232, AI363463, AA854712, AA825530, AA443313, BF239385, AI095110, W20418, W58687, W69502, AI028327, W73528, AI803249, H59104, AA933860, AA970638, BF680721, AV748822, AI128705, AA452952, W58686, AA582641, AI033287, AW263159, AV702086, H77347, AA286910, BG110576, AI301156, AV739424, AW993977, AA977957, AA825142, AW958007, AV744630, H49907, AI424203, H59143, H99044, AA971511, AA863091, AA296811, H77348, N92641, AI127018, H92900, AA884884, N30701, F30810, AA296822, AI219594, AA888566, AA962759, W73474, BF926138, BF681033, W69503, W93965, AI698882, AV750055, AA296691, W39151, AA883845, W93999, AA612823, F16300, AA565275, BF752259, BF087615, BF899291, AI884303, U77604, and I84662.
HEAAY09	247	992678	1 - 391	15 - 405	AU124283, BF306200, AU139037, T77235, AU121920, R14830, BF934985, AW403909, AW630865, AA359207, AI929350, BE552049, AU118152, AU133500, AL037780, AL037781, AW163588, AU119533, AL533231, AI342324, AL525586, AL534903, AL532560, BE082428, AL533180, AU137962, AL533149, BF307401, AW394232, BG114142, AU133890, AL517501, AW160514, AL536801, AI929125, AU126141, AU139293, AW368666, AU133708, R99660, AL532677, BE612412, AL513758, BE299128, AU135050, BE742584, AU129935, AI309542, BE886331, AW163176, BF346813, BF220002, BE512694, BF361085, AU134988, AW842087, AW842088, AW842086, BE541071, BF528575, AA178907, BE617099, BG178536, BF340570, BE891863, BF091880, BG109816, BE410513, AU140111, BF346953, AI201385, AA781408, BE894297, AU127156, BF316594, AU134195, BF528479, AA398237, AA403177, AA347489, BE897187, AA634306, BE873260, BG257621, BE891934, BF037637, BE796323, AL047517, BE890489, AA668405, BE544513, BF311830, BF529750, BE548934, BE314356, BF527194, AI018415, BE544804, AA192090, BF345146, BE539195, BE896937, AL037971, H79173, AA191007, AA160986, BF343228, AL036607, T96350, AI191902, AW246288, BE149595,

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HPDRH78	248	992780	1 - 1583	15 - 1597		AL517707, AL526969, AL534602, AL517706, BE793392, BE793400, BE798802, BE274603, BE793463, BG179834, BE796319, BE730416, BE799085, BE622275, BE797197, BE895295, BF684516, BG180391, AA313808, BF128627, BE902688, BF974046, BF309165, BF035424, BE542126, BE378892, BE279546, BE389149, BE264217, BE746282, BF980789, BE792649, AA143543, BE390945, BF939857, AA247475, BE254943, BF087367, AW602074, AA143677, AA669128, AI619455, AI885489, AW674128, T66216, AV653122, AW771167, AW673887, AW952242, W17242, AA465232, AA662828, AW156961, AI423378, C14781, AA847816, AI082555, AA064998, AI699796, AI654002, AI400301, AA976430, AA847635, BF129286, AI357386, AI371760, AA838647, AA465587, AA046948, AW083621, BE149761, AI252222, AI572527, AA907174, BF858322, AW247996, AA065085, AA366802, AI927121, AA366778, AW006612, AA001409, AL534601, BE859074, F12200, BF973830, AW904428, N89759, AI648415, BF090228, AA373821, BE936261, AI752839, AA610398, AI889695, R22510, AA383297, R22509, AI445855, D81188, D81094, C14780, F01851, D81093, AW472987, BF843018, AL037280, AW818769, AI801700, BE503553, H85986, AI251103, AW273610, F09830, AA321564, Z42323, D20815, BF747217, AA027150, BF746814, R12421, H71469, AA988870, AA835430, AI264946, T66149, AW839241, H86346, AA579666, BE538136, AV660656, AX011690, AF282851, AK000474, AP001714, AP000037, AP000105, AP000275, and AL355729.
HLMHG68	249	992900	1 - 1331	15 - 1345		BF967276, BF967822, BE675848, AI693547, AA398062, AW044341, AW117949, AW468685, AI801370, AA890730, AA778640, AW001899, AA456064, AI434131, BF508778, BE833021, AU145029, AI033982, AI826270, BG026214, AA455567, AA652457, BF108431, AI458156, AA918511, AA515452, AA631567, AA687760, AA573416, BE045477, F22701, BE546175, AA292780, AA477424, AI699125, AW770290, AA310438, AW884291, AA640186, AA290862, BE774653, AI686681, AA479585, BE881951, AA394172, AI394051, BF361999, AA291044, AA150391, BF855032, AI816954, BF737256, AA291855, BF869437, AA291733, BG259202, AL044192, AA768725, AI366983, AI701948, BF915315, AI926593, AW102900, AI345746, AI537516, AW079768, AI632981, AI608802, AI597805, AI636788, AA830821, AI050666, BF816031, AI923279, BF817746, AI951222, BF921215, BF913569, BF914101, BE393551, BE315058, AW083804, BF913568, AW129269, AW265004, AI699154, AI702540, N74355, BF305318, BE613727, BE965355, BF913615, AW301406, AI718161, AI923272,

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HODFO57	250	992973	1 - 2135	15 - 2149	AL521538, AU125521, BF793744, BG258951, BE796240, AU129772, BG256358, AW134800, BE253092, BE539282, BF822222, BE676509, AI884675, AI356274, AU159541, AI922366, BE676139, BF154835, AA522887, AI983195, AI652380, AA614362, AW193792, AI093421, AW474923, AA236204, BE939312, BE675234, AA131740, AL045292, BF478117, AU149161, AA781085, BE674720, AW514745, AI417244, AI093127, AW379958, AI276637, AA131671, BE252897, AW590126, AW379963, AW205128, AI289900, W28544, AA775698, BF589820, AW513803, BE257415, AA559118, AW571703, AI570252, AW630205, W56287, AW150930, BF746091, AI873877, AI813283, AI873584, BE939111, AW379959, AA256931, W20295,

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HOCPZ44	251	993380	1 - 970	15 - 984	BF308448, AV733716, BF667373, BF971945, BE791557, BF207166, BF685157, BF680048, BE730232, BE744787, BE257947, BF684668, BF686755, BE795339, BF032897, BG115810, BF037117, BE796212, BE512992, BF694324, BF037939, BF244980, BE793024, BF975403, AV744973, AA196804, BF733159, AA074869, AV701912, AW964407, AA308585, AI201081, W31092, AI911189, AA187442, AI332998, AA449114, AA196803, AA677398, AA652508, AI832556, AI360813, AI479643, AI371725, AI949595, AI523836, AI338226, AA583945, AI160821, AA812681, AI955259, AI272799, BE786863, AA463761, AA133351, AW105647, AI687745, AA471119, AA417906, AV756337, AI028708, AA779378, AA806308, AA719870, AI804084, AA628636, AA713507, AI076158, AA758900, AI242445, AI738876, AA513306, AI081646, AA593880, AA478598, AI192864, AI084956, AA312835, BE163110, AI189240, AI401016, AA419554, AA229993, AV709297, AI871846, AA620875, AA468096, W42538, AI094068, AA357299, AI188600, AI274502, AV742900, AI187079, BE385728, AI243176, AI284416, AA657626, AA962082, AA479333, AA463687, BF309104, AI224529, F19538, AA468083, AA468047, BE559524, AA234166, AA234913, AI804825, AA318716, AA987467, AA318396, AW795107, AA449548, AI127473, AA234914, BE717214, AA233918, AI147167, AA721050, AA469001, BE281458, AI476030, AA482379, AA385197, W42473, AW873836, AA091369, AW844269, AA383017, AW844282, AI253673, BE698022, AA969703, AW300509, BE698050, AI220722, BF819540, N44134, AJ003540, BE833240, BF374556, AA468927, AA720885, AI186421, AA872664, AA366125, BE549139, BF027226, AW794203, AA906776, AW403920, AA833536, AA887208, AL079619, AA187616, BF104085, AI371742, BF675494, Z20217, AW602656, AC006064, AF151075, AP001631, AP001748, AP002085, and A74500.
HPAMU38	252	993403	1 - 2925	15 - 2939	AL524221, BF974727, BE905660, BE906439, BF972299, BF339849, BF971432, BE871633, BG258581, BG027617, BG027987, AL043542, BE262313, BE547005, AW964993, BF129017, BE894197, BE859070, BG106537, BF304618, AA812224, BE882690, BF109975, BF541992, AI075752, BE735522, BF950143, AW408171, BG058798, N32170, AA861404, BF343941, AI859140, AA630418, AI524267, AI888719, AL043543, AI571362, BF972284, BF111665,

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HNGGK47	253	993602	1 - 686	15 - 700	AA587109, AW813774, AW959611, AA149541, AI184943, AA283852, AA915990, AI754552, BE146143, BE146078, AA192458, AI276859, BF058388, AW968813, N25247, AA179831, R50526, BE906097, BE748870, AA489709, BF058508, BG001227, AA600248, AA149622, R50552, AI831786, H60862, BE748864, AA159263, AA912651, AV704542, AI360851, AI094704, AA151772, AA088441, AA130533, AI732442, AA130457, AA115727, AA132985, AA156548, AA100473, AA156552, AA133314, AA146791, AA115406, AA085900, AA506505, H30250, AA130431, AV705967, R50721, AA156558, AA593788, AA134890, AA160532, AA115791, AA056456, AI732411, AI144451, AW975853, AA837803, AI732210, AI732209, AA527289, BE145948, N43184, AA216639, AA233457, AA055823, AI535936, AI242047, BE146358, BG255562, AW817478, AA418333, AI264351, AI274932, Z99365, AA132266, AA155720, BE675378, H69025, AA483160, AA484178, AI685396, AI479610, AA152342, AA890486, BE146091, R78417, AA219599, AA223178, AI052113, AA100721, AA703512, AA213692, AA627379, R98355, AW593679, AA102795, AA227040, AW341960, H38219, T53321, W28465, AI762542, AA052890, AA242847, AA252138, AA134470, AA099427, AA129454, AA135403, AA102232, AA135390, AA689437, AA173762, AW129244, AW007800, AI017153, AA227186, AA548735, AA308744, AA223472, AA772499, AW854595, AA962219, AI636602, AI700160, H51291, AA055663, AA984688, AA100673, AA143593, AA528777, AA838754, AA434477, BE748279, AI949977, BF673870, AI280212, BG013985, AW969910, N66779, W25656, AW025824, AA424412, AI743039, AA135407, AW966820, BE741129, AI285813, AA405703, AA832265, AA157818, AA219559, BF816863, AA424458, AA936323, AA196784, AW967555, N71300, AW962131, AI820789,

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HODGN51	254	993754	1 - 648	15 - 662	AI207402, AW983839, AW983779, BE267153, AF074693, AL157598, AW813858, BE393346, BE142616, AW819892, AW819887, BE161913, BE179562, BF343443, BE062392, BE143181, BE069054, BG104743, AW820198, AL157534, AW847202, BF686579, AW811905,

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HODCT60	255	993806	1 - 673	15 - 687	BG150704.
HAQBV81	256	993918	1 - 813	15 - 827	T68150, AA664288, AA113062, AL045561, H63748, BE350958, BF821840, AA190633, BG120327, BF994701, AW582857, and AW582794.
HDTGF49	257	993931	1 - 1643	15 - 1657	BF516217, AV732160, R83419, BG255616, BE171964, F27801, BG253577, AW474317, BE162826, AV755592, and AK002081.
HOGBN62	258	994134	1 - 642	15 - 656	W68274, AI073484, BE543503, AL524870, AL528375, AL524871, AL529901, AL528409, AA528652, T58395, T58350, AI242994, AL048969, AA713712, BE154526, BE154518, BG111530, AA569631, AA484658, AW275432, AI269832, H90845, AW263396, AI523991, F13773, W03981, AA129133, BE154459, AA526426, AW855982, BE158756, BE158799, AA988320, AI768952, AA348511, AA569586, AW885762, AA224238, AA489571, BF876739, BF877700, AA283455, BF877694, AA934825, AW974136, BF978936, BG058309, AA210951, AW833189, BF977345, BE154446, AA069473, AW238386, AI611736, BE154584, BE154524, AA368073, AA599710, AA368633, AI369977, AA708889, AL134280, AA557764, AA372884, BE179742, AW438765, BF992129, BE739174, AA664942, BF810146, F00818, AW817905, BF244176, AA714276, BG006133, AI819525, AA720531, AA908331, AI378950, AA601237, AA910680, AW387775, BE179910, AW387778, AW572140, BF978162, AI500563, AA411171, BF691653, AW769859, AI354388, BF833448, AA635135, AW510403, AW473996, BE961047, AW409710, AV739833, AI690379, AV695910, AW410354, BF212465, BE870750, BF571687, BF978010, BF691393, F01694, BE777501, BF977222, BF978508, BF691774, BF211406, BF238352, BF979045, BF690603, BE961172, BF692655, BF572980, BF184128, BF571004, BF184981, BF692099, BE777568, BF692045, AA581352, AW820694, BG110818, AA993041, AA584133, AA594072, AA599115, AA599143, T50205, F00112, T84169, BE888068, AA828062, BE147527, AA669985, AA297199, BF762987, AW087537, BF213033, W02403, AI870453, AI919048, H70469, AA719201, AI831171, AA381216, AA101744, AA744084, BF676352, AA512999, T87481, F29968, BE002881, AJ230815, BF803608, BE154517, AA745459, BF921846, AA744068, AA745533, R51854, AV694805, AW272389, AA745393, AA477103, AA639040, BF957365, BF915592, N58546, D29424, AI869406, AA985240, AW004922, BF831769, AL048090, AW192199, AW571499, T50255, BE886807, BE302658, AW439867, AA584814, BF917819, AI984742, BF879039, AA568127, H60396, AI635245, AL039669, AA525753, AA569474, AW387786, AC022392, AL359339, AK023436, AX048077, AF132952, AC005154, AC002449, AC011290, AL031985, AL008628, Z70289, AL161938, AC012099, AC006028, AC006578, AC005520, AF196969, AC007487, AL031575, AL109843, AL030996, AC004914, AC005697, AC010582, AL159985, AL035405, U95739, AL161670, AC004980, AC005831, AC000120, AC078899, AP001409, AF008243, AP001417, AP000160, AP000018, AC005899, AP001635, AL033543, AC009312,

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HSKGR42	259	994234	1 - 536	15 - 550		BF665644, BE617899, AW975289, AW370221, BF700281, AU154495, BF334587, AW673900, AA648105, AA186588, AV758959, AI858160, BF088091, BF694157, AA659697, BF131572, AA134338, AI914719, BG117553, N71529, AU155727, AA120820, AW363311, N22162, BE617450, BF155707, BE168417, BE879249, AU128878, AW996843, BG261212, AW576295, AW268074, AI343171, AI311237, AI335437, AI344929, AW274348, AI336661, BF239659, BF082539, BF438758, AI741448, BF108773, W73136, BE005344, BF829286, W73116, AI251367, AK000741, AK001701, AK001452, AK023438, and AF086334.
HOEBQ85	260	994356	1 - 1053	15 - 1067		BF980115, AI056683, AW071598, AA393981, BE350760, BF508825, AA053954, BE048405, AA397906, AI336420, AI022052, BE253405, AA007404, AI090549, AI147131, AI298335, N69649, AW627842, AA723269, AI671126, AL043975, W58502, AI051785, AI670024,

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HOPJG01	261	994536	1 - 1376		15 - 1390	BE793580, BF966696, AL527978, AU142696, BG112976, BF038095, BF339980, BF346274, BF525737, BF343070, BE796871, AI660492, BE795029, BE740676, BF338457, BF342629, AW157045, AU142854, BE779472, BE791809, BF348176, BF340334, BG108431, BF341150, BE963752, BF337746, BF528606, BE799928, BE251212, BE795188, AU142971, AU123853, AA608630, BE799766, BF984658, BE793148, BG178895, AU142368, AU142683, BF313309, BF435460, BG026841, BF680862, AW163707, AI929171, BE293477, BE799635, BE871928, BE207262, AW276503, BE382663, BG056162, BF205980, AI858505, BF311248, AW250342, BG035351, AU119034, AI573104, AU132674, AW247120, BG056369, BE207051, AI566557, AA126454, BE293760, BF340125, BF343144, AU143052, BF341561, AA194148, BF206123, BE206913, BF317056, BE907374, BE249879, AA582085, BE907893, BF310434, AI887640, AW615498, AW245039, BE260787, BE618820, AI880285, BE791120, AI859252, BF526752, AU123414, BE464593, AA778344, BF316388, BE253881, AW157606, BG059864, AI418820, BF434994, AI360942, BE788830, AI097502, BE798646, AA770622, BF337854, AW087978, AI921292, BE348883, BE546108, AW732146, AI653881, BG059738, AI023190, BE792435, AA194087, AA595219, AI025155, AU159706, AI085502, AA911630, AA744512, BE973865, AA534937, AA743675, BE262210, AI421284, AA581421, BE545834, AA604154, AA609450, AU145465, BE206914, AW163012, AU160213, AA552532, AU129356, AI929749, AA541593, AI363424, AA434310, AA069319, AI359872, AA968682, AA526861, AU160054, BE312609, AA621196, AW328427, AW384946, AA565664, AI460077, AI929377, AV709913, AA100233, AW163104, AI083875, AI344608, AA682988, AW072500, AI241695, AI366155, AA931506, BF344959, AI340434, AI927283, BF568570, AW248160, BF344603, AA011195, AI459660, AA689477, AI342248, BE858289, AA132540, BF966506, BF958070, AI298268, BE253399, AA635801, AW751546, AA995595, BE390802, AI089995, BF725281, AI282676, AW604964, AI719470, AA583085, AA593293, BF315079, AA729139, AA069373, AI940441, D54574, AW384914, BE671540, AA340245, AW848886, AI003397, D54696, AA156911, AI312413, AA427771, AI167483, BF822526, AI334066, AA130945, AI758341, AI348853, AI701237, BG056893, D55009, AW578066, W07297, AW604991, BE617959, AI869294, AA854599, W27359, BF057992, BF718433, BF718300, AI184838, AA814125, AA088243, AA984724, W32696, AA856797, AA397722, AI858542, BF951374, AA811595, AI266757, BF945422, W32697, AA975437, AA508200, AA156608, AA135907, AI051113, AA017372, AW604994, AA641157, BF945444, BF945443, AA903069, H49325, AI345697, BE252817, AI056127, AW374724, L47647, M16364, M16451, AR084972, M11306, M13453, M14400, M57664, M74147, M74148, X15334, M18668, M74149, K02831, M11660, AF120106, M10012, X00954, AF274307, X53859, AC005781, AC007225, M60806, X96403, M21243, X96402, M21242,

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HKBAK06	262	994596	1 - 655	15 - 669	AA292552, BE569091, AA001348, BG034403, BF680183, BF982202, BF972408, AU134714, BG255510, BF038517, BE382500, BG117853, BE267636, AU133407, AA082436, BE780204, BE535736, W44552, AU122890, BF204311, BF972973, AA081745, BF026531, AU127144, BG029609, BE904738, AU122938, BF242872, BF309946, AW960304, BE297387, BE883368, BE261919, BF033958, BE897037, BF212585, AA158070, BE569085, AA292753, AA476873, BE884804, BE269819, BE900753, BE314366, BE786840, BF035084, BF726787, AA926959, AA177048, AI719075, BE279271, BE778624, AA469909, N49786, BE706261, BE972278, AV685130, AV713469, AV714168, AV687846, BF246905, AU126674, H77575, R97470, AA037172, BG104737, AA908783, AV714475, AI935150, AA926960, W76521, BG249990, BE892033, W04339, AA405677, BE255916, BG104736, AI857576, BG179540, AV698081, R98127, AA293140, AV692796, AW662396, AA910644, AW514667, AA584410, AA889955, AA459522, AV716974, AW371701, AA583187, H78746, AW371667, AI828996, BE903886, AI865147, T55938, R75953, BF910357, W21526, W72395, AI422691, H03265, T77589, H83186, AW069734, AW613002, BE566245, W25243, BG033485, AA872039, AA527373, BF746365, AI423153, AA776920, H72525, R99156, AW104725, H03513, AW024595, AA100926, N31428, AW262230, AA621337, AW972459, AI204630, T88980, BF900364, T29812, H98460, AA772418, BE909377, BF205360, AU154749, AW886710, BF900351, AA662522, AA282997, H42079, W80565, BF507531, W95096, W24270, AI630359, AI459432, AI033892, W25071, AI423513, R54703, AI090262, AI831360, AI312104, AI804532, AA627684, N95210, AA769633, AA617681, W25611, AA416871, AI094597, AW391855, AI139549, AA633648, AI075239, AI339996, AI991988, AA740817, AA701623, N78215, AA129784, AA399239, N86396, AI362835, AI034317, AI336880, H99551, N83673, AA480310, AI989380, AU149836, AA643280, AA932124, AU117372, BF793467, N92892,

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HKGCN61	263	994664	1 - 1002	15 - 1016	AL526805, AL532675, BF568818, BF975676, BE378603, BE275224, AI924198, AA643194, AI309624, BF568408, BE908971, BF568499, BE385963, BF971390, BE262270, AI954015, BE389035, BF317394, AI862773, BE384108, BF316998, AW954240, BG255355, BE387330, BF215641, AI300492, AV705042, AI571484, AI708237, BE267988, AA772150, AL526773, AI963066, BE265217, AW583307, BE267984, BF207808, BE885366, AW082898, AI554351, AA905048, BG058692, BE858566, BF431959, BG031824, AW873616, AA484736, AI243757, AI924677, AW304210, AA056581, AW328052, BE386932, AI887613, N52247, AW015277, BF726042, AA037075, AI092433, AW583724, AW070340, AA446995, AI096768, AI039582, AU143962, AW021398, N39299, BF216019, AA682891, AA897545, AI241411, AA468723, AI027327, AA503806, BF569049, AA834926, AA902862, AW328127, AI091496, BE676690, AI376786, BF337861, R91343, AA448467, AA609074, AI358828, AA651870, AA143139, AA052970, AA911153, AW241215, AW290993, AI804639, AA001193, AW020020, AI024157, AW572581, AI866825, AW016319, BE907946, AW021471, AA805372, AW015233, H82552, AI400288, AA917723, AA938524, AV750655, AI037929, BE088452, AI673478, AA533610, AI290857, AW769953, W67130, R97256, AA904951, AW340505, H22433, AA053447, AI310161, F24749, BE185312, F19447, BE242972, AV746492, F28239, AA365755, H87901, H56065, F31714, AA969644, AI287714, N34577, AV660944, AW328053, R55213, AW028384, AA506078, AI050822, AA843353, AW572594, AA296650, AW884694, AI041792, W67129, AI357504, AA056685, BE677849, T84900, AI915408, AI678129, R55210, AI311793, R97020, AW151468, AI005405, AI393159, T91318, AI798212, AA770285, N91398, T55560, AA143379, BE170083, AA809332, BG010512, AA934707, N45147, AI282846, AA968881, H40291, H18341, BG029457, H38979, AW805564, BE936154, N69370, BF155976, N53131, AI918485, BF155969, BF155973, H87357, BF155972, T25428, BE938005, BF831914, AA588800, AI005569, AA885911, BE242874, BF088463, H56260, AU126287, AA889514, BE702510, BF957306, H22470, AA453054, H46707, BE185337, H39174, D20650, AK000574, AX015413, U47101, AY009128, AK022758, AY009127, AC008119, and AC007793.
HTXDY55	264	994699	1 - 276	15 - 290	BE241618, BF967213, AU136610, BF980823, BG167993, BE904497, BG166879, AA316320, BG108260, BF032916, BE219939, AA429187, AA446365, BE327680, AA121059, AI681670, AW651689, BG028658, AL523554, AI929475, BF210951, AI984608, AW367123, AA262627,

HFOYI37	265	994776	1 - 739	15 - 753	BF966433, AF035606, AK001917, and U58773.
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HOFNL18	266	994874	1 - 393	15 - 407	BF982594, AA304945, BE786293, AA355289, BE882518, BG164113, BG036187, AW945552, AL522242, AL521727, BF345678, AL533751, BE018492, AA312114, BF210611, BE886709, AA495817, BF002097, W72340, BF968410, AA477457, N79824, AI669118, AI245484.

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HOFNT57	267	994954	1 - 1163	15 - 1177		AU130186, AL532858, AU143566, BG032538, BE731387, BG178926, BF246251, BE546764, AI130008, BE882058, BE900653, BE901813, BF131040, AW238927, BE278958, BE280397, AA146802, BG258310, BE280706, AA037291, BF130537, AW408060, BF671218, AA281910, BE958235, AW958055, BE958177, BE281535, AA304757, BF698291, BF082842, BF667061, AI378241, AA304345, BF155007, BE855677, BF196802, AA380691, AW963766, AA878646, AI702569, AW026139, AW372761, AA635825, BE855640, AW372751, BF733132, AI472824, AI016431, AA843477, AA887947, AI378170, AA744678, AI361091, AI081395, AW516559, AI003236, AA146803, AA767727, N34655, AI399815, AA380690, AW856740, AI080717, AA962414, AA661648, AI983339, BF476713, AW088309, AW304176, BE719113, AA961155, AW189866, and Y11651.
HCBMT45	268	994993	1 - 1656	15 - 1670		AL524032, AL520718, BF343440, BG114926, BG163566, AW749600, AI628088, BE903299, BF348876, BE902526, BF036229, AU121257, W47499, BF348874, BE070481, AW875044, AA326810, W04800, AW838268, BE671868, BF357960, BE547306, BF888235, BG114819, AW937280, AA434529, BE070427, AA004472, U92010, and AK022138.
HATDZ56	269	995200	1 - 1879	15 - 1893		AU117737, AU119363, BF981791, AI126717, AI052256, AU121212, BG165314, BE902257, BE536040, BG259893, AU142181, BF342007, BG164121, BG111390, BE898067, BG028752, AW189938, AU135622, BG118715, BF795161, BG169327, BG121236, BG028368, AW070663, AI885180, BE880899, BE881172, AA745594, BF306702, BG107907, BF740223, Z99376, BE539928, BE892210, BF220065, AI014817, BG249687, BE880172, AW239211, AI784576, AW073683, AA524748, BF528854, BF665628, AW327439, BE779442, BF792343, AW276639, BG122906, AW872951, N36799, AI608763, BE783594, BG231999, AA627848, BE546358, AW247076, BE328479, AI127547, BE614484, BG179876, AW960374, BF343168, BE093813, BE958181, AA166916, AW327258, AA568685, BE464835, Z99375, AA700740, AA740916, AU150439, BG033007, AA573156, AW631056, BG177074, AA099018, AI051506, AA074799, AA812422, BE613976, AA835672, AW627745, AW976548, AI185757, AA503846, AA761648, AA592898, BG114482, AA160273, AW029151, BE546491, AW517165, AA451628, AW250428, BE958175, AI138225, AA809470, W63552, AA828239, AW327612, AI371140, AI371046, AI004126, AI089539, BE539342, AU145724, AA127406, AI537332, AI190076, AA687268, BF381173, AA715174, BE206290, AI073676, AU128126, AA167073, AI278484, AA775540, AI923795, BE535848, AA524391, AA978034, W88636, AA768416, AI635344, AI025865, AA992622, AW403551, AA393865, AA721424, AI024400, AW362155, AA962673, AA856908, AA173982, W73908, AA314538, AI031946, AA593126, AA031733, AI167830, BE936495, AA100657, AI922493, AA888675, H83589, AU123056, R54097, BE697208, AW819111, AI380802, BE043974, AI752947, AI761093, AI033288,

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HOCQ144	270	995229	1 - 715	15 - 729	AI831252, AI650374, BF061759, BF057060, BE797203, AI935139, BF061760, AW005769, AI417343, BF311313, AA554943, BE891954, BF685276, AI246563, BE618097, BG032880, BE397206, AI554680, BF976708, BF797333, BE744727, BE538158, BE907169, BE618643, BG164883, BE885647, AW274491, BE295294, BF237549, BE552307, AA160710, BG109868, BF594273, BE886498, AW080931, BE504728, BE559663, AI660049, BG164638, AI637467, BE900800, AU123019, AA777748, AI808876, AI380738, BF684237, AI270758, BF973412, BE895506, AA564413, BF310917, AW020646, AI281284, AI203218, AA403150, AI368831, AA401483, BE268039, AA913021, AI264541, AA305922, AA700029, AA705555, AI097153, AA430504, AA149943, N75989, BG119145, AA629934, AW966695, AA913020, AW472855, AI308917, BF981762, BE784527, AW027600, BF082396, BF974975, AA136118, BF057814, AA936828, BF082395, AA401609, AI867762, AI264545, AA974269, AA633277, T86566, AA834364, BE789276, AW263663, AI133562, BF594511, BE904898, AA596035, AA977854, AA315182, BG033608, AW016092, AW404348, AW025749, AI884737, AI250679, T86744, BF345117, N89562, BE905692, AW079637, BF762047, AI565861, R80990, AW237726, R94970, AI695116, BE901072, AW188591, AA382274, BE205766, BE550389, R95056, AI799019, AW590111, AA719022, AI909396, AI288271, AI909403, R80790, AA760768, AW970688, AI909375, AI858174, AW849952, AW807662, BF809022, AA576241, AI590646, BF082228, BE009475, BF922727, AA403208, N88948, BE926176, BE009463, BE294296,

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HNOJG43	271	995562	1 - 1016	15 - 1030	BF530931, BE887433, AA700637, BG031212, BE787285, BG032265, BG250289, BE872777, BF975368, BE888350, BG259501, BG178671, BG121264, BE385572, BG025460, AU123889, BG120763, BG176849, BE018986, BG251569, BF310080, BF796217, AL040945, BE292902, BE867768, BE778230, BE313767, BE535894, AW651694, BF203366, BE885600, BE018210, AA568104, BE263239, AW244142, BE890472, AW069664, AA165235, BG029628, AA311257, BG028398, W26906, BE873320, H29111, AA379686, BF081407, AW732839, AA165234, AA379707, AW408242, H92844, AA309679, AW732846, AA355319, AW244134, AV739862, BG030885, AB040387, H17153, AA337612, BE384475, BF811815, AA079621, BE385617, AA327809, AA453327, N89415, BF757893, AV737107, BF085282, BF358015, AI904702, AI571790, BF088476, AA028062, AA028061, AW262589, AA877545, AV737069, AL040946, AA149034, AI911678, AI264209, AA582725, AA594933, AW513329, AA488110, BG231727, AW612918, BE301689, AW673154, BE208801, AI885475, BE207777, AI678902, AA879144, AA588402, AV708243, AV708606, AI904760, AW899615, AW971745, BE208405, AA617827, BE837271, AA772717, AI281987, AW804686, AW392670, BE695785, AW861944, AA612842, AL119396, AW604723, U46349, AL119355, AW858526, AW858525, AL119522, F30775, BF926800, Z99396, U46351, AW877209, AL119319, AL119457, BF858264, AW190557, F21301, BF360811, AI685800, AL119324, AI311525, AA970639, AA954246, AA151031, AW276144, AA463498, AI302605, F36969, AA971107, BE705903, AA745842, AA884129, AA613325, AA779167, AA832350, AA907225, AW615590, BE705906, AW577135, AL119483, AW372827, AW384394, AL134525, AW861889, AW858455, AW363220, AL119497, AL119484, AL119363, AL119391, AL119401, U46350, U46347, AL119443, BF868687, AL119444, U46341, AL037205, AI904745, AL119341, BF868684, BF868697, AV744583, AW604726, AL119439, BE705905, U46345, U46346, AL134538, AL119418, AL119335, AI142137, AW511430, AL134902, AL043019, AL134536, AL042544, BE705904, AL119399, AL042984, AL119496, AW861954, AI142132, AL043039, AL043033, AL042614, AL043029, AL042450, AL043011, AL042965, AL042542, AI142139, AL042975, AL119464, AL043003, Y08915, E12650, AL158141, AL049776, L31652, AF000577, AJ223156, AJ223157, AB026436, AR080280, AX046357, AR060234, AR069079, AR066494, AR054110, AJ251859, AX030435, A81671, and AJ279014.
HSPSB95	272	995590	1 - 979	15 - 993	AL523089, BE735213, BF690068, AI192441, BE793432, BE794150, AA630330, BE791668, AL523088, BE901445, BE793552, BE515306, BE276069, BF689238, BF027098, BE900126, BE562743, BE747331, BE791104, BF973064, BE733064, BE620825, AL529029, BF025872, BE311984, BE744764, AA641149, AI971403, AI049983, BE387021, BG033880, BE515093, BE796039, BG034885, BF796669, BF026756, BF685347, BG030617, BF688429, BF794151, BG117363, BG169033, BE730729, BE797697, BE728295, AI680328, BG033071, BE908570,

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HCORG29	273	995806	1 - 1461	15 - 1475	AL525031, AL530529, BF663306, BF971545, AW025025, BG258475, AU118761, BG032914, BF685877, BG121633, BE903452, BF981478, BF685489, BF797011, BG116837, BE620242, BG164987, AA827927, AI554406, BG249820, AI524296, AI571895, BG180487, BE740527, BF525728, BE393489, AI572859, AI811667, AI570178, BE387716, BE620784, AI884603, BE879489, BF127513, BG253264, BF663728, BE395984, BG253562, BE905611, BF219300, BE785705, AW338209, AI439999, BF211816, AW613426, AL525030, BG030951, AA156241, AA679290, BG107695, AW167595, AI819887, AI375063, W73277, BE350515, AI189651, AI610178, AA458883, AA491213, AU145990, AA827903, BE787350, AI005398, AA922921, AU119724, AA054320, AI160911, AI685114, AU145249, W05582, AI093117, AW021515, BF216780, AW022794, N30640, AA581846, AW469855, AW163065, AI266487, BE350933, AI031704, AL038497, AI372851, BE172272, AW510581, N67420, AI760129, AI567473, AA641542, AI368039, AI823984, AI669557, AW363504, AI283802, AI089726, AA551037, AI918930, AW631236, AA617652, BE856972, AI357866, AI306589, AI269694, BE715156, BG004783, W69646, AI309054, AA845918, N22717, AA829897, W69647, N24200, AA988609, AA459073, AI362823, BE265458, AI538392, AV693399, AA715103, AA132151, N30171, AA581975, AA132029, AW004780, AI687460, BF215226, AA054420, AI352565, AI758991, BF732353, BF692209, H10217, AI434220, AA025260, BF431116, BE869449, AA025338, H87399, BG222957, AW887096, AA341088, W87822, BF816282, R94593, AA076082, AA490721, AW591730, N75554, W87911, AI433500, N40816, N62299, AW952176, R36365, BF816279, AA878469, BF446815, AA618380, AV748450, AW630598, AA320520, BE768577, AI539196, AW407015, R46078, AI302689, R85306, AA056977, AA147254, R05766, BE812153, AA282256, AI587368, AI024987, AI763128, AI680889, AA341584, AW627423, R85305, R01156, AI350405, AI678578, BE075897, AA010791, AA447827, BE768617, AA173636, H59964, BF367093, H10272, N95145, AI769382, BF741466, AA931906, BF976950, AI814270, R94594, AI581915, AA282730, R92966, BG032240, BF342174, AI217691, BE812421, BF002679, AI384121, N27031, W56129, AI351715, BF571368, BE741347, H69103, AA210625, BE328449, BF799534, AI971774,

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HCRNO02	274	995894	1 - 525	15 - 539	AI087863, AW205361, W67736, AW135527, BF112018, AI261883, BE886105, AI954585, BF592922, AA922244, AV726182, BF033136, AW402172, BE889683, AI347209, AW605270, AW949405, AU134577, BE539958, AW605272, AW418630, AL525630, AW601391, AA321817, BF115737, AV689056, BE565311, BF572563, AI933896, BE894922, BF853166, AW605273, AI879891, AI692564, BE909642, AW270487, BF669959, AW084360, AA602961, AA101742, AW612752, BF757848, BF797062, BF977586, AU142848, W25008, AV708387, AA306002, AW614255, AW377570, AV728041, AA016984, BF755701, AI802071, W67735, BE885363, BE884342, BE890337, AA377036, AA092406, R27168, AA069079, BF760715, U18914, S82081, and U35428.
HCBOI79	275	996247	1 - 879	15 - 893	BF344503, BG253745, BE884245, BE315407, BG180340, AI114464, AI744084, BF003120, AW451065, AI888992, AI431740, BF568084, AI380546, AI656998, AW300527, AI433538, BE464324, AI160803, AI874272, BF476317, AI916753, AI638710, AI952946, AA009412, AI888867, AI796216, AW051510, AI871622, AI382137, AI570640, AA136115, AA009693, AW237382, BF592115, AI916760, BF102764, BG256114, AI357604, AW206165, BF059310, BF874841, AA767400, AA962144, AV694380, AI223191, AW242929, BE791944, AV707942, AA136067, AA450010, AA047548, BF591090, AA057784, AI671950, AI803084, AA452628, AI183340, BF591405, AI810350, AW015645, AI217043, AI818009, AW182191, AI564896, AW075602, AW014905, AI357555, AI766792, AA566017, AI336131, D20857, BF668498, AI751642, BF568923, BE799110, AI364812, BE673585, BF217847, AI873178, BF954384, D31155, AI969843, BF939241, AA329597, AW169141, BF221870, AK000857, and AC003112.
HVCAB73	276	996337	1 - 1513	15 - 1527	AL518842, AU118468, AU117968, AL517493, AU117660, AU119978, AU142310, BE790938, AU142367, BF972250, BF984978, BG252995, BF684869, BE559749, BE560314, BE902291, AU128821, BE795645, BG032172, AU123321, BG110982, BE792404, BE300141, BF982746, BG113974, BF984581, BF794875, BE907107, BG257415, BF309826, BE795893, BE792464, BG028288, BF965624, BE735087, BF976730, BE799193, BF305694, AU142239, BG257876, BF529711, BE613812, BE614422, BE791689, BE885879, AL517492, BE409756, AU135389, BE783011, BG032093, BG114278, BE901386, BE618095, BG122124, BF026898, BG256177, BG251091, BE612467, BF311267, BE618641, BG107568, BE888894, BG180037, BG028062, BE278994, BE614277, BE891718, BE868694, AW947123, BE298422, BE908780, BE278771, BF979838, BG121166, AV759228, BG116644, BG108186, BE272582, BE746783, BE785332, BF316338, BF973741, BE730725, BF979294, AV698719, AL040837, BG106907, AV706709, BF311733, AA206423, AV706293, BE789022, AV706359, BE259394, BF983820, AV713317, BE543291, BF980476, BF310651, BG031342, AU134782, BG261061, BG251520, BF981835, BE396863, BG028634, AW946539, AV653256, AL035921, BE275555, BE612914, BG026070,

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HSDJH04	277	996619	1 - 926	15 - 940	BE904901, BG168030, BE878351, BG259171, AW732563, N24355, AV724626, F24474, AV722309, AI261328, AW328428, BE674638, BF345021, BG255797, AA532928, F37428, AI370570, F22370, F32515, AA296010, AW070530, F33022, F31501, AA918040, F22734, BE905663, AI022292, AI929756, AI300554, AI718610, AI718646, F33373, BF793297, BF793269, BE875134, AI339442, BE855791, AI342832, AI735425, F33367, AA603132, AI695802, BE730633, AA429820, AI024066, AA031459, AA532849, AA772747, F37419, AA136087, AA873691, AI017375, AA625381, AW467861, AA994440, F30932, AA513042, AI191651, AA907866, R09570, F19496, AV741591, W52552, AI497696, BF035508, AA770559, AI369674, AA506595, AI279742, AI302456, AA320307, AA303547, AA452025, AW627910, AI418637, R28551, BE907102, BF965846, R07147, H51877, F35932, H27315, F29523, F28344, AA548806, AA535397, AA148236, R07146, F21114, BG254257, BF185406, AA555277, AA304129, AI968949, R09479, AA570105, AA876458, AI160002, AA304639,

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HSOAN18	278	996804	1 - 616	15 - 630		BE466450, AW085532, AW241624, AW241613, AA806056, AI139578, AW241447, AI655042, AW296683, AW241504, AI005390, N32749, AA732371, N32766, N75507, AW977149, W23313, BF671561, BE541574, AI349361, H01507, H00269, AL079342, AB030654, AF155159, and AF092093.
HHEHF49	279	996874	1 - 788	15 - 802		
HCHCF36	280	996903	1 - 838	15 - 852		AA604207, BF568246, BF685919, AA769075, AI829363, AI160465, AW611817, AI365676, AA909715, BE504747, AI333819, BF828573, AI523938, BF989966, AA768116, BF091370, AI168213, AI658820, BE390437, W56333, BF987457, BE797515, BG110670, BF974205, BE745959, AI652259, BE563589, AI097626, W56246, BE880543, AU141729, AL134271, BE933141, C75024, AI933359, BF087614, BE279562, AI475845, BF314042, AI936721, BE735049, BE298845, AI933320, BE265132, AW512295, BF802106, AW498827, AI431995, AI283491, BE222982, AW449482, AA808235, BE392368, AI763116, AA814951, AA505663, AW274238, AA056204, W56326, BF036391, W56359, BE900914, AI656477, BE818925, AW162674, BF309126, BE700914, BE254984, AA055543, AI760331, BF827226, BE395139, BF229557, AI369700, AI369699, AI197948, BE048398, H81842, AW242467, BE818985, BF307576, BE617252, BE514899, BF125485, AI972328, H44030, BE742153, BF828519, BE793542, AI082336, AA459967, BE812253, BE184274, AU130605, Z25808, M77198, M95936, D30041, U22445, X65687, X61037, and AC002364.
HAHCK58	281	997127	1 - 1797	15 - 1811		AL530933, BE744244, BE886518, BF307394, BE886078, AA521306, AI346509, AW014616, AU154742, AU160803, BF307330, AW662413, AW043807, AW000956, BF434533, AU159740, BE350868, AL530932, AU153954, AA031263, BF897515, AU153595, BF223978, AU146675, AU152826, AA524349, AU143944, AI340333, AW128969, AI826348, AW305306, BF062439, AI564106, AW304346, H71784, BE878383, AI161344, AI262022, BE504256, BE326650, BE504858, AI039240, AW162372, AI962737, AI309252, N76604, AI815896, W69677, N94090, AI935385, AW271271, AI948839, AA010408, BG004347, BF091918, AW513419, AI289056, BF055132, AI638198, BE219405, AW008633, BE676811, AA532714, AA632276, AA040180, N54492, AA570140, R98609, AW025830, W69676, AW510423, AW073235, AI694628, R15330, H71783, AI886412, AA582538, BF798373, AA635538, AW578114, N69270, R98610, AI917180, AW014409, BF886580, AI383709, AW078973,

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HETII06	282	997165	1 - 371	15 - 385	W04730, BE266365, AI133648, BE793925, BE559709, BE790580, AL518848, BE865465, AL530857, BF132480, BE740884, BE795484, BE793563, AI304872, AA741065, BE865290, BF683810, W80875, AA122216, AA308813, AA284386, BF326544, AL355392, AF161516, AK023992, and AF152097.
HAPOE30	283	997595	1 - 2897	15 - 2911	AU117247, AI126490, AV717396, BG104731, BE501285, BF056914, AI094852, BF796496, BF063299, BG256800, AA454987, AA454988, BG114650, AW080282, AW966631, AW168948, AI336277, AA772322, BE220380, AI859792, AI417858, BE466892, AW103075, AU159373, BE504285, AA918401, AI432403, BG230590, BE673392, BE670742, BF725058, AA410511, BE540683, AA083340, AW594055, AA418120, AI949050, BF112235, AU144138, AA679107, AI708897, AI376002, N78061, AA477527, AI700609, AA828552, AI991181, AA417942, AW168995, AI139660, AI021901, N25477, AI004673, AA411601, AA024709, N49529, AA693511, AI985704, BF343591, W60152, AA778693, AA180440, AA418978, AI767329, BE350692, AI242979, AA577408, W51942, AA524990, AW195065, AW028525, AW953384, N49287, AA418805, AW243797, AI246226, AA024727, AW008941, AA757727, AA527910, AA074180, C05139, R67172, BF348935, AA813662, AW971329, W94122, AW614468, AW513979, N58471, AI868472, AW182171, AA707715, AI183895, AI927765, AI620107, BF508176, R59987, AI654118, AW204432, H44803, AA352918, AA295664, AI499474, AA363317, R09270, R26284, AI784077, AA385639, R25459, H95934, AI572507, BE160130, AA885993, AA363316, R35885, R35884, AW993480, AW023692, AA721410, R36442, AA251090, AI864808, W94018, AA579940, AI872496, AI249523, AW993214, R36160, BE817052, R58756, AL513907, AV729890, AL514919, AL514627, AL513597, BF054789, AI985363, AL121270, AL514691, AV655645, AL514791, AW071349, AW827203,

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HRGDC33	284	997862	1 - 1826	15 - 1840	AL530171, BG167455, AW341526, AA143021, AI621276, BE695940, BF540992, BE695955, N34863, AW593873, AL530172, AW196758, BF223067, BF223008, BG054486, AI392748, AI807788, AI147923, BF666752, AI634124, AW204647, BF438607, AA293879, BF476285, BE866767, AW276898, BF434775, BF103871, AV712302, AV711800, BF983985, AI392984, R63482, AI680602, R63481, BF507828, BF688635, BF908078, AI795905, AI444949, BG178163, BE048998, AW269138, BF689020, AA251885, AA150912, BE566036, AW884530, F34562, AW801105, AA872641, AA321262, AW082114, BE001578, AW674054, AW961602, BF913145, AA937288, F29869, AI924910, AI908447, AW800341, BF746755, BF215227, N43936, BF676410, AI969745, BF061733, BF796686, AI990282, AW884388, AL109918, AP000568, AP001676, and AR022362.
HMTMB91	285	997873	1 - 1162	15 - 1176	AV755264, BF577013, AI923558, AW268804, AW469653, AA760854, AA580566, AA580691, AA836465, BF899990, BF926478, AA768321, BF514639, BF088900, AW392416, AI885519, BF061715, BE888827, AW129764, AI951031, AW858464, AI936012, T40389, AW392849, AI820997, AW858513, BF950338, AW836417, AW392833, AI821288, BE503330, AW837691, AW750461, BG114047, AI275943, AF109907, AC004858, Y12017, AK026107, AR060046, and AR060053.
HFAAD07	286	998059	1 - 988	15 - 1002	AV684787, BE674615, AI887753, BG258585, BE218749, BF224413, BG165003, AI702451, BF224407, AA548464, AI978680, AA071156, AA191693, BF570780, BE738364, AI797896, AI826052, AA041342, AW014334, T62575, AA197202, AI084270, AW375498, BE775118, BF333162, AA188647, BF431428, AU155686, AA602203, BF751398, BF365027, BF155009, H10377, H20737, T63199, AU117290, R71297, AI829554, BE645507, BE815650, BE247171, BE701182, T62541, AI659397, AI868867, AI810306, R40856, BG110361, AI701277, AA602213, T62616, AI221666, AA070862, AA860281, BF718478, AA191265, BF088816, BE090765, BE840583, D25992, BE704032, BF692434, AW754457, AW363933, BE540276, AI217112, AA528408, BF981414, BG015645, AI633390, AV727030, AI199435, AK023434, AB029036, AJ132948, AF119043, AL035410, and AK021491.
HE8TG67	287	998517	1 - 1884	15 - 1898	AL537729, BF346881, AL536527, AL517563, AL518650, AL525543, BE621523, AL536921, AI040011, AL531577, AA704144, AL516123, BE271006, BE540109, BE619747, AL533503,

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				A08913, AF130110, A18777, AL133619, AL389957, AF090900, AF116682, I89931, U91329, AL133557, A08912, A08910, AR087170, A08909, AF017437, AK024588, AF132205, AL050024, AK000618, I33392, AK000212, AF153205, AK025798, AK000310, I09499, AL133014, AK025465, AL137479, AR038854, AK027116, A08908, AF090896, L04504, S76508, I89934, AF116644, AF119883, AF090943, AK027121, AB048953, AK000250, AF119857, AK026608, AR083266, Y16645, AF028823, AL049382, AB047897, AX019230, AF225424, AL080154, AX011676, A07647, AL359620, AF208026, AF056191, AL050393, S78214, AF113691, I29004, AF130104, AL050146, AL162083, AF119896, AF143723, AF119859, AK026741, AB049853, AF090903, AF262032, AF117657, D16301, AL137547, AF155827, AL096751, D83032, X66871, S36676, AL049283, AL122050, I46765, AK027204, AL117585, AR079032, AX046842, AL117394, U42766, AX019229, AF113013, AX012188, AF113689, AR034830, I96214, AL359622, AF218031, AL353957, AF111851, M30514, U58996, AF202636, I17767, AF111849, AK026647, AF106657, AJ005690, AL133104, AF116639, AL133558, AK025967, AX047644, AF218004, AB050421, AF185576, AK000083, AJ238278, AK025349, AF242189, AL353940, AK000391, U80742, AL122093, AL080126, AK026600, I00734, AB049848, AF267991, U75932, AF314091, AF116691, S75997, AL050277, AL137526, AK025391, AB048888, AL110196, I03321, AK027146, AF026124, AF218023, AF116646, AF254119, M27260, AF130068, X54971, AF138861, E00617, E00717, E00778, U57352, AL359615, S77771, AF178432, AL133113, AK026506, AF175983, I89944, AL133560, AK026534, AF100781, AL049324, AK024992, AK027102, AK027096, AL137557, AF159141, AL137478, AF218014, AL390154, AK026642, AK025906, X70685, AL049314, Z72491, AB047941, U53505, AL117583, AX017991, AK025209, AL137459, AB048974, X52128, AF130105, AK027164, AF017790, AL137529, AB050431, T92736, R33834, R33835, R33993, R34880, R36088, R36183, R41327, R53706, R41327, R72170, R73657, R76025, R76227, R78754, H15810, H19741, H20074, H26185, H28046, H39612, H42479, H44400, R85909, R87326, R88467, R90835, R90836, R90927, R96270, H51203, H51431, H51570, H51940, H92747, N31624, N62322, N79443, W37310, W69152, W69277, AA016048, AA016059, AA017717, AA029411, AA029277, AA065039, AA071000, AA074465, AA113882, AA171923, AA533376, AA551621, AA551734, AA584329, AA568455, AA657809, AA745127, AA761504, AA804720, AA834831, AA857175, AA968508, AA976763, AA291776, AA427412, AA476955, AA669654, F22178, AA852221, AA861255, T03330, T03513, AI027029, AI080033, AI122866, T15399, T17025, AI439358, AI560117, AI566983, AI567273, AI570382, AI582975, AI584181, AI624390, AI627996, AII83819, AI654280, AI272156, AI587318, AI613240, AI689548, AI690603, AI744851, AI745467, AI799307, AI859423, AI859509, AI919574, AI953465, AI963535, AW016491, AW088681, AW071042, AW128909, AW130417, AW131920, AW152670, AW197018, AW078705, AW079199, and AW337323.

HACNC39	288	998533	1 - 527	15 - 541	BG258323, AV726190, BG059174, BF031580, AW247693, AV733393, BF673590, BE393632, AV718256, W33034, BG223143, BG027098, AA316722, BF540944, AV740290, BE620501, AA761185, W76104, BE880515, W72590, AV712501, AI373016, AW951730, BF343423, AI301029, AW516518, BE336891, AI973019, AW954688, BE267264, F19333, AA642858, AW275727, F24037, BE886443, R98379, AA293612, BG029810, AI074416, AV682189, T30842, AI193781, AI709082, AA010642, BG178022, BE206642, AW163422, AI369744, BE737738, AA972242, AA505959, W30911, AA622015, AI479908, N39461, N99973, R89095, F24482, AA081027, AA502036, R89203, AA035242, AV758359, AA573301, BG116673, BF976770, AI205784, W69222, AI301695, H55975, AA081028, BF028555, N95321, W01264, AI719663, R98380, AA861810, W07432, BE744309, W57656, AA927506, AI719437, AA226340, AA226339, AA659132, H55976, AA635460, BE263378, AW004852, BF208315, AI096433, AI885213, AI097113, BE858122, AA935727, AA935732, T64927, AA128637, AI282165, AI299205, D31544, AI087422, AI299261, AA977268, AI493422, AA535488, AA927717, BE738497, AI028146, AI027821, AI288435, AI590079, AV744150, AI758305, F32365, AA601928, AA862695, AA910891, BF082399, AI867500, AA601890, W69078, AA535582, AA011251, F22069, AW162386, AI554628, AW157546, AA514029, AA527091, AA514433, AA948196, AA307500, AW163423, AW841585, AI266428, F36879, AA304694, AI277191, BE620900, T34355, BF687997, D11824, F29996, AA127824, T19184, BF898606, AA852606, AA480469, AA385328, AA046538, BE045065, BF678637, AI880263, AA128770, T39525, AA837248, R66514, T67659, AI580758, N73968, BE567125, BF217569, AA680363, AA301822, AA055001, BF246041, T32179, AI879869, AI143015, AI141685, AA010673, AA177089, R67830, AW964427, R30686, AA973995, AA572821, AA282316, T30691, AV715207, BF743095, W24587, AI468069, AA321070, AA358416, AI445120, AA996068, AI014448, AA908418, AA931480, AI148889, AW583730, BE045228, AA045468, AI467821, AW583317, AA308501, BE049525, AA962130, AI148886, H47357, F37883, F27165, N70956, W35401, AW151841, AI148586, BE833126, F31392, F17340, N75848, BE174000, W03741, BF819345, AA092713, BF541948, BF819342, AC008752, and AF318186.
HCOQP78	289	998901	1 - 1051	15 - 1065	BF038501, BE743899, BF032818, AA587273, AI470221, BE501242, AI566249, AW590780, AI963941, AI916929, AA933987, AI656124, BE672062, BF508514, AW873183, AW801187, AW610294, AW998772, AI914774, AW610295, BF915088, AW998876, AA320217, AA343629, AW965060, AA401047, AA400995, AB008927, AB008390, AF055982, AB009849, AF095742, AX002035, AF095743, AF251125, AF243527, AC011473, AB012761, AB010780, and AX002037.
HCGMA67	290	998905	1 - 2397	15 - 2411	AL516908, AL529636, AL526532, AL528012, AL522876, AL521127, AL526488, AL521128, AL516907, AL531189, AU122740, BE745665, BE250550, AU119700, AI743606, BE798628, BE736968, AU125167, BE797870, BG112405, BE902115, BE560581, BE734679, BE793368, BF969559, BE620400, BE268360, BE736647, BE902108, BE728049, BE796873, BE870756,

					AW411493, BE270572, AU133808, BG121078, AU133710, BF686594, BE910106, BE257320, BF317202, BE793091, BE730051, BE263846, BE384717, BG115969, BE879093, BF183030, AU134059, BF974997, BE737205, BE396557, BE262942, BF027539, BE793751, BE904872, BE893045, BG178142, AU133810, BF310279, BE311403, BE780071, BF125763, AW249262, BG167684, BE799083, BE150570, BE264319, BF797226, BE276706, BF797134, BE277414, AU122878, AI819948, AW292784, BE018144, BE731116, AI346337, BE388636, BG232088, BE644993, AW085502, AI819956, BE273350, AW411494, AI922650, BE079846, BE390098, BE385907, BG250419, BE264525, AW248841, BE542604, AW604679, AI818941, AW264093, AI126505, AI818959, AW837557, BG114384, BE779041, AW182262, AA436151, AI184672, AW069602, AA599479, AI150894, AI687205, AI637558, AV649134, AA594595, AW168019, AW068429, BG035056, AI091663, AI346196, AA436277, AA232178, AI923623, BE139474, AW001867, BF348648, AI802886, AI082781, AA452041, BF912320, AI138457, AI986228, AI346777, AA133011, AI085977, AA127224, AV648865, AI659420, AV648769, AW857727, AA743051, AI721055, AV648944, AA211354, BF894734, BF892701, AA156145, AI261503, AI357961, H82468, H51040, BF752799, BF948221, AA306464, AA995825, H77453, AW837617, AA155712, AA451842, BF752803, BF951602, AA631133, R86155, AI270028, BE301626, AV725027, AI538266, AA844701, BF761725, BF752808, AA064668, AI810461, C18335, AI961800, AI129748, AW381832, BE152165, AA280183, AI184909, AI125741, AA133126, AW067954, N44500, AA156399, AA322829, AI241053, BE767776, BF594788, BF951594, AA826959, T72301, BE706433, BE063208, AI380368, AA127223, BF350441, AA306328, T48747, AI911666, R31445, AW673805, AA382705, AA922112, AI688280, AA385663, BE710692, AW194218, AI984114, BF764757, AA353720, AW883638, AA130715, AI784292, BG254395, R50604, AA347146, AW016251, AA300597, BF851633, AW302862, D25743, AI351721, AA130800, AW276690, AI499265, AI537970, T69840, AA281560, AI633516, R53694, AI049970, AK025165, S53268, X56741, X56385, S53270, M83675, AC011742, AL137068, AC003104, AC011452, AC006329, AC008812, AL391690, AP000335, AP001725, AC009086, AC003029, AC004151, AC002401, AC011475, AP001732, AL121929, AC007386, Z99716, AL117334, AL050349, AL138741, AC004840, Z85987, Z83838, AL031680, AC005098, AC016995, AC000353, Z93015, AL162505, AC010422, AL121933, AP000215, AP000350, AC008163, AC003007, AC005071, AP001469, AC008649, AC004166, Z83845, AC006480, AC004975, AL049762, AC004867, AC005632, AL139353, AC010289, X14448, AC002351, AL133174, AP001038, AC005082, AC004159, AL033538, AC006312, AL389886, AC006530, AL031291, AF024533, AF030453, AC004673, AP000557, Z82179, AC005180, AC007283, AL158830, AC009470, AP000031, AC026199, AF135025, AF053356, AF031078, T55532, R50516, H51041, H77454, AA064715, AA116002, AA128604, AA132717, AA665918, AA709196, AI091860, and AI696317.
HSKHK19	291	998968	1 - 1335	15 - 1349	AL519526, BE256801, AW130128, AW970424, BE621017, BE787578, BE621643, AI589581,

					AI949575, AI818124, AI589840, AW081864, AI912753, AU145975, AI634482, AI563933, BE223113, AI074607, AI569706, AI814661, AI373372, AA496332, AI860757, AI184874, AI812006, AW275925, AW275923, AA443603, AI866518, AI049612, AA535149, AW104765, AA446619, AU146067, AW938784, AU119822, AI377544, AL519527, AW613441, BF510601, AA496667, AA910533, AA568546, AI033588, AA457153, BE676768, AA454523, AW170554, AA187136, AI241929, W72667, BF530659, W06898, AA699709, BE540686, AA074340, AA367858, AA443905, AA577051, AI928605, AW151489, AA367893, AI656686, BE702465, AA379678, D63303, AI017693, AA513395, C02140, BE702440, AA676828, AW751107, AA476663, BE048320, AW337952, BG004582, AC004890, and D30612.
HAGGR59	292	999124	1 - 584	15 - 598	BE784070, BF002337, BF514872, AA568401, AA579465, BF967065, AW752043, A90832, and AL121674.
HOPKS83	293	999148	1 - 2249	15 - 2263	AL522393, AL533573, N99342, AL516958, AL535381, AL523241, AL535062, AL522394, AL535382, AL516957, AL523240, BE562445, BG105219, BE612965, BE312728, BF312923, BF315986, BF035342, AU118409, BE743128, AU119979, BF317065, BF315006, AI911669, BF206582, BE378738, BF314738, AI920919, BF307782, BE393973, AL517298, BG105346, BE299566, BF312608, BE336625, BE743194, BE899095, BE878702, BE314539, BE299463, AI863032, BE382388, BF793901, BE299754, BF033995, AW956858, BE336951, BE263982, BE299939, BE794536, BF204946, BG117746, AL517299, BE540363, BE746220, BE889577, BF310262, BE296433, BF032410, AI630771, BE262722, BF206365, BE881335, BE792711, AI962939, BF038482, BE736530, BE262374, BF983571, AL041532, BE222837, AI203519, BE747404, AW474516, AW860949, AI467799, BF038659, BE395887, BF205799, BF984646, BF035677, AI446105, BF033792, AI683133, BF207213, BE390734, BE880386, BE797748, AW084757, AI623575, AI198705, BF317016, AI688407, AI131027, AI951929, BF035073, BF724131, BF034309, AI680339, BF361335, W63745, AI802236, AI620096, BG117568, BE395019, BE963719, AI631270, AI017269, BE382313, AW404858, AA069776, BE217748, BE161881, AW131659, BF306325, AI146732, BF741443, AL041531, BE260390, BF811734, AW951865, BE963088, AW516123, AI126564, AI376222, AA399190, AI473708, BE298239, AI024470, AA069813, AI693963, AI038226, AA557265, BF832766, BF038178, AI146374, AI310457, AI371081, AI302272, AA613136, AI148411, AI080066, AI469677, BF315092, W58405, AA031461, AW301060, BE743266, AI366166, BF812723, AI097537, AI199004, AA479914, AW575954, BF956421, BE260076, AA156788, BE391447, BG169831, BG015923, AI814687, AA728764, AI859489, R72685, W74501, W61097, BF092603, BF092637, W58479, BF811740, AI683174, W79724, BF092611, AA974665, AI874214, AA156877, BE395715, AI568464, BF590686, BE336638, AI743500, BF948695, AI538384, AI039247, BF948453, AI149388, BE830442, BG059628, AA394042, AI625093, AW630225, BF092602, AI274730, BF446367, BE261854, AI040040, AI810483, N94374, AI446509, AI658968, AI367239, BF912314, H48071, AI018149, BE019825, AI589495, BF948722, W58139, AW511638,

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HE8CY70	294	999157	1 - 1830	15 - 1844	BE797192, BF530420, BE745297, AU117223, BF527457, AA496607, AU123909, BE872588, AW882094, BG013957, AU121939, AW351481, N79880, AW959439, F11971, AV693216, AW390117, BF931676, BF742689, AW997245, AW937846, AW800106, AW796165, BF931403, AW899383, BE700047, AL042881, AW899297, BE699796, BF819802, AA300925, BE149577, AW899299, BF743447, BE699998, AI570163, AA366791, AW899558, AU147665, AI978630, BF436552, BG010862, AW001282, BE700284, AA662508, AI635169, AW170627, AI890519, BF509786, AW130855, BE706148, AI783780, AI983256, AI801585, AA323509, AI193784, AI400088, AW009844, AI288952, AW166951, BE838621, BE819028, AW937780, AU151740, BE819006, BE838640, BF475968, AI983330, AW009053, BE819041, BE838648, AU129660, AW026864, AI199344, AI369124, AA348716, AA400881, AW117735, BE838678, AW169754, AW104779, BE904184, AB007867, X87904, and AJ011415.
HPCTI53	295	999243	1 - 1791	15 - 1805	AL535256, AL534951, AL537065, AL534840, AL532662, AL534290, AL534839, AL537766, AL536321, AL536486, AL519773, AL519772, AL534970, AL514450, AL536487, AL532832, AL515338, AL532707, AL517308, AL533170, BF966574, BF966824, AL533327, BF969218, BF312752, BF966857, BF971333, AW954554, BE741256, AU138028, BF348305, BE742610, BE746943, AL528920, BF966861, BF791964, AU134706, BE382457, BF793547, BG036726, BF206971, BF793341, AU136569, BE788895, BF793833, BE314586, BF528036, AU139364, BF315334, BF528947, BE786032, BF969765, AV705152, BG031513, BF970234, AI795976, BF966199, BE383501, AI147046, AW857216, BE784831, BF966444, BE259799, BF951728, BF527213, AL537064, H93036, BF951951, BE260158, BF951931, BE793344, BF951912,

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HOPKN50	296	999313	1 - 1689	15 - 1703	AL531915, AL527360, BE903220, BF684028, BE561023, BF984727, AU129601, BF978548, AV718036, AW955129, BG257162, BF665251, BF667950, BF219086, BF038467, BE889796, BE565202, BF244797, BE564344, BF218992, BF576929, BF977553, BF976962, BF029347, BF540908, AL527307, AL531914, BF246890, BF687621, AA312280, BE940500, BE566742, AA700427, BF700934, R92253, BF977894, BF246242, BF666100, BF994346, BF001266, AI954614, BE503512, AA249583, AA188980, AI955047, N88235, AA249666, AA189047, BE857720, BF899120, AI341285, AI341287, BE543964, AF017790, Z59345, and AJ236630.
HAPAII7	297	999778	1 - 1280	15 - 1294	BF033653, AW444993, AI871043, BF032343, AI807343, AW510878, AI950459, AI826126, AA447467, BE857146, BF509983, AA001932, AA446661, AI859171, AA872128, AA922684, AI083866, AW297393, AU138791, AA775527, AW262576, AI361621, BF033189, AU155748, AI933363, BE645182, H13820, AA670262, D45494, BE899588, AA228815, AA315799, AA977654, AA683497, AI586990, AU134985, BF853051, BE315005, AW890841, BE788343,

					AW769578, BE746090, BE019946, BE612484, BF035920, BE301953, and AK001832.
HHAUV59	298	999808	1 - 1896	15 - 1910	AL048447, BF312839, BG024591, BG117134, AI678749, BE839416, AA675912, BF307871, AI765059, AW572765, AW007348, BE675880, AI885787, AI435265, AI075277, BF934019, BF309250, AW964131, AI524738, BE297104, BE933325, AI383625, BE773064, AW269313, AI522069, BG253109, BF933881, AA675911, BE888599, BE048871, BF056045, AI827292, AI830068, AW204343, AW001183, AI633366, AW732389, AA378192, BE047068, AW899221, BE743381, BF800703, BE747149, AW501959, AA312335, AI632305, BF057718, AW001192, BE258013, AW471190, BF935373, BE545235, BF034266, BE019131, AI763226, BF305211, BG004997, BF109329, AI187053, AI970090, BE440030, AI492245, BE140494, AA460452, W00626, AI628639, BF569680, U73200, AF311311, and AK025229.
HTXLL31	299	1000315	1 - 2567	15 - 2581	AW851285, AI307751, AW851000, AW850996, AW851276, BF111184, AI860767, AA151346, BE326805, AI670955, AI670956, AW474917, BE962693, BF057083, BF692970, AI762646, N54275, AI304947, AI129360, AA431590, AI653467, AI523805, AW816568, BE933761, N78023, AI188725, BF684485, AA429000, BE046482, AI417222, AW003359, AI690557, BE222504, AI335940, AA035134, AW627685, AI765632, AI276573, AI301819, AW026872, AI285087, AA808713, AI262798, AI000876, BE698558, AW206586, AI341622, AA035133, AA088715, AI373092, AW851281, AW367644, AA088714, AI767023, BG223175, BE939909, AW851279, BF926936, AI537741, AW194241, AI138638, AA100747, BE010120, AI251120, BF223753, AW630988, AW166773, BF350566, N58715, AI289411, AW339814, BE243498, AA341869, AW339823, AA811859, AV650677, AW865812, AV654828, AI262069, AV657837, AI610516, BF196451, AI473271, AA431459, AW300347, AI631804, AW771246, BE153798, AW374420, AA100730, AI696300, AA135161, AW849214, AA135257, AA216017, AW865611, BE613126, AA149246, AA665876, AA341868, AW050441, AI174474, AA227718, N58433, AA249421, BF353512, AW391686, BF810441, AA535957, BE926241, BF885921, AI123195, BE174780, AI345415, BF911517, BE612556, AI345612, AI568293, AI345416, BF971669, AI654276, R36271, AI590043, AI370322, AI333104, BF763458, AL036901, AI520964, BF911521, AI583578, BG260817, AA761557, AV718258, BG179795, AI690813, AA618618, AI621341, AA814343, BG025897, BF997967, AI539260, AI918677, AW075382, AW085373, BF726255, BE439844, BE966699, AI638644, BE886790, BG257360, AV747571, AI434969, AI538850, AV756182, AI568061, AI282669, AI927233, AW955313, AI368579, BE620296, AL040243, BF970768, BF726231, AW167215, AI811840, AI500061, AW083572, AI419826, AV755821, AL046942, AI698391, BF792047, AV682387, AL039276, BG113299, AI499279, N25033, AA555145, AI744268, AI923989, AI370623, BE965129, AI826230, AW630386, BF725395, AW083573, AI866469, AW827289, AW128834, AI537677, AI580027, H89138, AI699175, AW020561, AW005029, AW263709, BG166654, AL039086, AW020419, BF765551, AL037602, BF835240, BF310166, AI679550, AI863002, AW959800, BE778453, AA749449, AW168406, BF344359, AI364167, AI635528,

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HDPUH64	300	1000339	1 - 691	15 - 705	AA481292, AA279864, and M78277.
HTTHS93	301	1000424	1 - 1331	15 - 1345	BE886817, BF981304, BG109169, AU135262, BE439496, AW239234, BF670052, AU138465, BF542074, AW239554, AW966687, N90372, N45516, W76608, AW949321, BF431123, AA307160, AA173490, BE185499, AV744410, BF063334, AW294497, BF675907, AI861878, BF980429, T29000, R11099, AU123270, R11071, AU123334, AA478933, BG181115, BE815659, AW363100, AA705027, AW363101, AI718686, AI718938, BE827298, N68560,

HMVCG79	302	100058 2	1 - 1858	15 - 1872	AA091199, AW754043, BE741054, D13645, AL365475, AK024584, and AF245442. BF971208, BE869819, BF676817, BE878141, BF312727, AA258513, N21319, AA258357, AW293672, BF772376, AI075876, AI337429, BF589677, H71643, H63685, H71642, N31254, BF447980, AI081147, AW169975, AI245423, AI079154, AI291037, AW008074, AW270768, AI446205, AW500064, AW277174, AW505125, H04371, AA364456, BE739747, W39161, AI636439, AI192631, BE738966, AW157005, BE383034, AI709174, AI028510, AA992126, AW275719, F23327, AW975049, AA743811, AA657835, AI205181, AA608683, AA728894, H79308, AA968509, AI434311, AV717634, AI625244, AI281881, AW674711, AA515170, AA340747, T06828, T48723, AA362573, AA865262, AL045077, AW368401, BE270471, AI524050, AV719311, AV682003, H67172, AW238278, AV757334, AW845750, AI754955, AA772016, AI804604, AW021583, AU125644, AL043721, AW971192, BF911530, AI654746, AW819611, AA669251, BF940837, AI932902, AA502155, H85059, T83057, AI284463, AI287651, AI811460, R94288, BF946625, BF766147, AW963291, AU144397, AI888365, AV732042, AW504326, H56013, AA774019, AI539776, BG059523, AI864260, AW276827, AA347927, AF244577, AJ387747, AK025880, AK026921, AF244578, AC007510, AL359894, AC007225, AL133412, AC003080, AF190112, Z98258, AC006205, AP001717, AC005661, Z94721, AL031594, AP000049, AP000116, AF190110, AF190113, AC004826, AL138721, AC008651, AF134726, AL020993, Z98051, AC003101, AC005037, AP000193, L78833, AC007676, AF002993, AC004821, AC010422, AL021808, AL121928, AF190111, AC010723, AC007739, Z84470, AL122003, AL121777, AL360227, AC007324, AC004385, AF200465, AC005088, AC007387, AC011479, AC007360, AC004906, AP000517, AC001066, AL022323, AP000311, AC003084, M87889, AC011895, AC005519, AC005229, U91327, AL031229, AL139382, AL138976, AC000036, AL390755, AL021878, Z82245, AL117347, AC004159, L81893, AC005840, AL050318, AC008155, AC012611, AC005015, AC000159, AF195658, AC005592, AL035417, AC011440, Z99495, AC005043, AC009178, AC035149, AL163278, AC004971, AB023049, Z98752, AL121586, AC009075, AC004076, AC027319, AC006948, AL118506, AL031722, AL031602, AL132825, AC008521, AL358214, AL049537, AL354696, AC000134, AC004186, I51997, AF031078, AF030876, AL136092, AC005486, AC008041, AL158830, AP000117, AC008171, AL096814, AC006511, Z78978, AC018720, AC007881, AL031587, AL050302, AC004812, AL136090, AL096791, AL031296, AC007243, AC010605, AC005256, Z74021, AC013451, AC010553, AF217403, AC020663, AC006536, AC005071, AC006305, AF029308, AC069080, AC003012, AF130418, AC004477, AL096819, AL355497, AP001669, AC008813, AL137073, AF317635, AL031848, AL022394, AF108083, AC010169, AC005952, AC005921, AC004526, AL391316, AJ009615, AC003007, AP000552, U82670, AP000359, AC002365, AC008543, AF205195, AC024561, AL160175, AC016027, AC011309, AC005295, AC018766, AL109614, AC005280, AC002082, AL353807, AP001421, AL022315, AP000013, AC008469, AC008958, AC022493, AC007114, AC005763, AB002390, AC007156,

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HODHK20	303	1000669	1 - 677	15 - 691	R64014, AA112737, AF176555, and AL136527.
HCHMO53	304	1000875	1 - 784	15 - 798	AV661850, BG169511, BG248919, BF206995, BE787624, BE292793, BE292947, BG167015, AA149518, AW248322, BE788739, BG165453, W68799, BG165990, AW955265, W80356, AW027341, W80631, AW006772, AW006753, AA405876, AI568522, BF436364, AA142865, AI831235, BF032073, AW014568, W68728, AA807542, AA135477, AI077951, AI038765, AI371106, AA634984, AI279024, AA927093, AI131300, BF526325, AI346693, BE351031, AI818983, AI040435, AI862834, AI672933, AA847380, AW090192, AA725414, W49698, AI308968, AI342232, AA405750, AA719097, AI222540, AA135567, AW960497, AA291233, AI038328, W78749, N94738, W17032, AA308326, AI088656, AI032894, AI022131, W49697, AA806295, AI077792, AA878384, AA704008, AI342828, BF939427, AA973620, AA708319, N89773, AI355923, AA306672, AI093528, AA056216, AI271747, R92271, AI215791, BF055447, AA724958, AA894581, AI014948, AW005009, AA040439, AI146870, AI041232, AI220135, AI184832, AI216830, AA056217, AI161403, AW371794, AA906636, AA301648, AA464688, AI682824, AA304676, AA610246, AW009773, AA303948, AA380765, AA772960, AI018514, T34735, AA534787, AW998332, AA613084, AW248085, W78953, AA303607, AW079652, AW189904, AA996272, AA364075, AA046631, AA303545, AA356933, R91942, D25597, H90498, AA700414, AA704184, AA428953, AA303514, AA642176, AA809653, AA932960, AA229336, AA872832, AI963537, AI636251, AA284154, AA781331, AA992512, BF751365, AA040438, AA228480, C20802, BE168202, and AW376045.
HFKKG84	305	1001066	1 - 978	15 - 992	AI138616, AW300425, AW772406, AW268862, BF055191, AI742921, BF055196, AI654832, AW511109, BF445916, AI824093, BF590313, AI088790, BF513605, AW057904, BF116007, AW572798, BE467017, AI357591, BE299861, AI809223, AI523869, AI424949, AI343405, AI741265, BG032861, AI378380, AI222175, AI932241, AW967410, AW081363, AA236611, BF594076, AI394054, AI354679, AI292206, AW117384, AW340692, AI285920, AI452454, BF111690, BG117257, AI452979, AI857953, AW629001, AI738406, AI934760, AI743316, AI283498, AI918777, AI693913, AI272944, AI339174, BF941902, AI243940, BF446024, BF732754, AA687997, AI097628, BF515727, AA769454, BF446070, AI916272, AI097611, AW627991, BF445914, AI299722, AI085289, AI206071, AA237028, BE275495, BF001500, N30391, AI419554, AA470723, AI472547, AA765721, AA765517, AA884353, AW082296,

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HOFMT20	306	1001333	1 - 288	15 - 302		
HPAMB04	307	1001695	1 - 1309	15 - 1323		BE563085, BF971689, BF973050, BE409548, AV706183, BF685884, BE746940, BF684962, AI739106, BG177492, AI831843, AV729983, BE889848, BE906979, BE902057, BE887637, AV702427, BF973465, BF683167, BF684203, AW439384, AV706746, AV751573, AV730781, AV730711, AV730171, BE888797, AV731759, AV723449, AV732002, AI421858, AV731708, AV726505, AV731977, AW001496, AV728270, AV730547, AV731043, AV731694, BF683357, AV752043, AV732149, AV731744, BE614064, BE614545, AV725927, AV710495, AV751921, AV706724, AV752443, AV730288, AV702869, BE883121, AV731313, AV707088, AV732653, BF001456, AV710534, BF684760, AV656240, AV711496, AV710938, AV758481, AV732200, AI884472, AV731275, AV727103, AV701611, AV659189, AV752447, AV723452, AV757088, AA654332, AV730165, AV702798, AV707783, AV730778, AV704592, AV730816, BE512957, AV758133, AV737377, BF127820, AV732353, AV710906, BE881971, AV702409, AV753374, AV726674, AV756895, AV755473, AV728872, AV711240, AV757887, AV733303, AV760693, AV730859, AV710417, AV761002, AV731915, AA587899, AV755874, AV662191, AV710375, AV732155, AV710562, AV752993, AA203213, AV751555, AV732089, AV704974, AV711413, AV713945, AV727932, AV652156, AV658362, AV763440, AV761270, AV728844, AV710825, AV756053, AV737379, BG030466, AV740829, AV729129, AV705280, AV737380, AV745415, AV706357, AV739275, AV726738, AV702637, AV711571, AV725369, AV705263, AV732746, AV702354, AV738275, AV745906, AV711344, AV746276, BF036894, AV732255, AV711567, AV729568, AV711274, AV703012, AV707171, AV752684, AV723195, AV707686, AV705020, AV763171, AI149441, AV704611, AV707117, AV710622, AV706035, AV731653, AV687176, AV701237, AV757823, AV713377, AV758003, AW873154, AV721645, AV709407, AA587336, AV701320, AV709897, AV728777, AV757553, AV710909, AV759183, AV710394, AV710086, AV704916, AV737413, AV704924, AV710941, AA918519, AV730449, AV736429, AV726067, AV740404, AV714368, AV724987, AV702954, AV709969, AV710935, AV726624, AV697638, AV731884, AV726520, AV709935, AV718341, AV756386, AV712324, AW080368, AV647654, AV710090, AV706104, AV729263, AV728715, AA812298,

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HODEK48	308	1001901	1 - 731	15 - 745		AI953677, AI671518, AL121981, M92068, M84463, and AL137062.
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HODFU72	317	100252 7	1 - 1287	15 - 1301	BF676003, BE076759, BF959556, AI556964, BF362236, BE079009, BE244665, AV701402, BE929112, R18432, R14837, AB037841, AF257305, and AL353807.
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HODIL25	320	100255 1	1 - 1814	15 - 1828	AU120042, BE780972, AV715756, AV711451, BF347691, AI357871, AI818374, BG104561, AW613119, AL119040, AI610884, AW129956, BE840539, AA861081, AW080968, AI949210, AA088340, AA911979, AI890636, AI082565, AI253533, AU151586, AU150967, BE840639, AA594005, BE835307, BE349344, AL047924, BE835388, AI217066, AI401436, AW170795, BE439805, AI808939, BE567432, BG236052, AA232142, AI078839, AW193031, BE840631, AV754839, BG024161, BE769183, BE769133, AA421829, AA136375, AI080190, AA136322, AW958948, AA825391, AA147532, AI492527, AI493374, AI242642, AW029010, D59969, AW264735, BF096116, BF764397, AL041312, BF095708, AW627822, D79956, W95261, AI270468, R74381, AA355105, AW939263, BE925867, AA136289, AA136235, AA659078,

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HUVHS56	321	100256 3	1 - 1064	15 - 1078		AA203629, AL523163, AL521771, AL514552, AL536987, AL529628, AL530356, AL523994, AL526673, BE730806, AW161326, AV717844, BF210986, BE869187, BE792999, AA486503, BE618082, BE796377, AV647216, R18207, Z46093, W68658, T36060, W86087, AI766913, BG015222, AL529627, AL523162, AL121978, AF097441, and AF161438.
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HLHCI46	323	100259 1	1 - 1120	15 - 1134		BE745588, BE734397, BE743824, BE901231, BE744857, W07146, BF111606, BE546841, AI690974, AW088619, AW949727, AW814747, BE900714, AA403287, AI889156, AW814748, AW129598, AI683118, BE207596, AW328600, AI887762, AI610835, AA481380, N56708, AA481367, AI745462, AA436422, AA488506, AI925227, AA424928, AA488375, AA291206, BF854548, AW025142, AA436437, AI193004, AA191102, AA191618, AA425789, AA179594, AW814623, BF854596, AW328384, BE206324, AA429456, N91535, AA429409, BE206635, AI168355, N93766, AA410861, BE019724, N34948, AW173364, AA406034, AA132971, AA635680, AI873874, AA114122, AA902581, AA402655, AW439590, AI014384, AI805735, AW102991, N95256, AA181711, AA235638, AA179386, AA588888, AW945261, R70421, AA937052, BF111064, W24495, AI432991, AI688841, AA453901, AA292794, AW043790, AI742119, AI819826, AI589144, AA182646, AI033708, R35071, AW878037, AI127889, H02585, H02673, N44015, AI083623, AI167896, AI093391, R27127, AA402674, R69440, R24530, AA188983, AI126803, AI796496, AA179593, AI687841, T29279, AI874368, AI874089, AA995647, AI129225, AW005198, AW950250, AI612969, AW016758, AI041739, AA775666, AI198246, AW051259, R35070, AI919412, R24517, BF510671, AA188982, AI806083, R26895, AW024209, AA026820, N29700, AI669245, BF446304, AA669286, AI381870, AA191233, AA033732, AW814836, BF854598, AI868567, AA489419, R26659, R24635, AA114278, AA974642, AA706808, AW814634, AA489361, BF820587, AA191534, T80757, R24620, AI340025, BF445525, BE466179, AI356663, AA626873, M28099, X62753, J05013, M25317, U20391, M86438, M64782, AF061256, AF096319, AF219904, AF137374, Z32564, AF137373, Z32633, J02876, X69516, U89949, M64817, AF000380, U02714, S73490, S73474, AF000381, U78794, U78793, AL050348, and M35069.
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HSCLR05	327	100280 7	1 - 980	15 - 994	AW963399, AI609934, D80029, AW102867, BE672203, AI745441, AI472112, AI041677, AW439716, BF092701, AA838613, AA962296, AA828728, R98102, AA834893, H54015, N50938, AA043772, R83194, AI221967, H68772, AA372063, AW900696, R98103, W93231, AI183613, AA371856, AA861294, Z21092, AA431494, AA043771, H54171, BE878252, BE765324, BF683734, BE766646, AA424498, BF092669, and AK000435.
HVVAO74	328	100281 1	1 - 1150	15 - 1164	AL517746, BE314392, BF685767, AL517745, BF663864, AL527798, BE901139, AL526086, BE732253, BE730581, BE273465, BG033928, BE274994, BE793389, BE735117, BE736161, BE274909, BF025763, BE797068, BF793676, BE795151, BE276067, BE799798, BF568859, BF797444, BG031038, BE901143, BG027437, BE898049, BE733741, BE731033, BE797663, BE730448, BE904242, BG180030, BF058792, BG036034, BF025707, BE410862, BE618538, BE547475, BE728447, BF568805, BE281217, BE270552, BE791501, BF032884, BF983027, BF679076, BE389168, BE880439, BE409460, BF528780, BE795806, BE275489, BF685111, BE275834, BE880404, BF662872, BF305445, BF027645, BF306589, BG032276, BG025207, BF686113, AW960462, BF568562, BE262720, BE883448, BE785807, BG249555, BF791670, BF686641, BG030409, BE276910, BE259215, BE382696, BF037141, BE794633, BE276938, BE266608, BE389026, BG034257, BE732487, BE276779, BE790192, BE268263, BE909056, BE729122, BE728799, BF128006, BE872841, BG031367, BE900561, BE268310, BE410738, BF854010, BE388364, BF568658, BE018670, BE514363, BF237574, BE886108, BE387313, BF308798, BE267700, BE389685, BE385517, BE389304, BE296678, BG116916, BE618919, BE909775, BE267922, BG231768, BF573426, AA075347, AW954753, AW249908, BE279555, AW247787, BE387389, BE311424, AW674345, AI924518, BE881839, BF854355, BF854139, AA099137, AU150900, BF858145, AW085546, BF858158, AA810641, AI094712, AI983831, BE208512, BE537365, AW848677, BE543319, BG111959, AA121335, AA776475, AW162889, AA768161, AI985750, AA075600, BF127877, BF858133, AW104662, AI587554, AA832303, AW974204, AA827218, AW072974, AW732057, AA782428, AI818506, AI923790, AW073752, AW262769, BF925345, AI094923, AI683905, AW512935, AI289229, AW305043, BE042722, AI276197, AA806259, AW512367, AI493600, AA569388, AI346741, AW475015, AA946821, BF515131, BE798771, AI432816, AI263880, AW302618, BF063047, AI744754, BE939146, AW439553, AA629031, AA009635, AW007234, BE350557, AW674453, BE336843, AI538381, AU149699, AI274098, AW966999, AI440437, AI799716, AI127260, AI799164, BF303754, AA554181, AA554976, AA253120, AA761082, AW089894, AA554583, AI344421, BF962198, AI749787, AW193957, AA707869, AA903212, AI311788, BE538355, AW246180, AA826402, AA631886, AA280597, AA206821, AI300392, AW163603, AA995293, AI245900, AW769752, AI749149, AA847378, AA253380, AA281999, AW575857, AI357033, AA653882, AA679720, AI936832, AA253406, AA992132, AI245858,

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HVVBI81	329	100312 6	1 - 1033	15 - 1047	BE562883, BE733460, BE731242, BE616471, BF184098, BE614999, BF124993, AW161042, BE732247, AI720002, BE735398, AW963989, AW007333, BF529351, BE614720, BE909977, BG168999, AW001354, BF105923, BG034355, AW163527, BF439955, BF982101, BF698001, BE885275, AW474669, AV763438, AW945186, AW055293, AI608832, AA577204, AW130759, BE885816, BE350922, AA280097, AW517232, AA404292, BE395053, BE273672, AW007233, AA569806, AW769131, BE281579, AI827062, AI127609, AA176848, BE378887, BF341546, AA780006, AI335990, AI141330, AI149137, AA847806, AI031744,

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HVVBK18	330	1003155	1 - 1070	15 - 1084	BF305151, BE735037, BE747506, AU142350, AW007738, BF969509, BF237675, BE536135, BE887112, AV762678, AI189162, BF304178, BF685859, BE904945, BE910235, AI831230, BF796121, AU129499, BG028749, AU129917, BE253409, BE383400, BE786396, BF038236, AU126872, BF211966, AW151710, BF794652, AI025755, BE791012, BF308698, BF573136, AI828932, BE791105, AW131497, BE350874, AI680282, BF345258, BF215074, AI581180, AW778828, BE567149, BF103688, AA706900, AA583905, AI185849, BF184091, AU123046, BG113431, BF382100, AW664218, AA737763, AI338605, AI672800, H97858, AA479594, AA482100, BF242491, BF107188, BF215495, AI262005, BE865968, AU127161, AA443583, AA480133, AA393815, AV662236, AI002710, AA722765, BE536238, AI831666, AA477032, AU151980, AA878562, AI142353, AI689584, AW276192, AI567125, AI015877, AA862947, AI580858, AW993389, AA284572, AA862518, N35547, BF928258, AA492405, AA284877, AA152127, AA131821, AA476920, AI833193, N28814, AA243320, AI243915, AI304511, AA293499, AI342052, AA132004, AA293112, AI140958, AA443648, T56244, AI281588, AA453009, AI863847, N53065, AI186249, AI312511, AA761708, AA865831, AI272898, AA131997, N44572, AI206382, AI220411, AA490063, N23342, AA962083, AA150044, BG059293, AI591408, AA534684, AA630630, AI935160, N99371, BF573103, AA477433, AA669307, AA393918, N26856, AA865189, BF941869, BF673621, AA099578, AU149842, AA774040, AV721930, AA912358, W39527, BE247542, AV741784, AI766710, AV755538,

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HOFMS19	331	100322 2	1 - 420	15 - 434	AW629632, BE906747, AW238814, BF244456, BG035566, BE896159, AL523247, AL526987, AW161580, BF034231, BG110736, AL525505, AA594515, BE350096, N74741, H91423, N35197, Z72000, D83745, D64110, AP000432, AF087037, and AP001670.
HSCLM55	332	100322 4	1 - 1080	15 - 1094	BF036860, BE874607, BE613153, BF131283, AW024416, BE218012, AW662566, BG033319, BG178742, BE677139, BF038607, AW992000, BE697884, AI421202, AI434791, BE857176, BE858592, AW960360, AI309982, BF752463, BG122649, AW572665, BE697883, AI769534, BF432791, AW473625, AI393963, AI378930, AI492647, AI769524, AA953114, AI380180, AI420285, BE884521, BE697886, AI805717, BE697879, AI077552, N26060, AI678958, BE205797, AW627557, N40424, BE790024, BF110838, AI190662, AI613423, AA976041, AA581509, AA776498, AI268866, AI291641, AI289100, AI208759, BG113949, AW466940, AA278467, BG121150, AA665834, AI341899, BF940423, AA315414, BF752452, BF823045, BE765726, AI671697, AI961637, AI613432, AA989174, BE813958, BE765666, AA235080, BF438697, BG171186, AV739357, AW802718, AI127470, AA603717, R80986, AI085843, AA235209, AA993834, N80556, AI160297, AA421270, AW863774, AA187209, AI205566, W39334, AW277106, H59979, AA045407, BF752395, T75129, H09069, W52459, AA503424, AW971006, F10405, BE005409, AA421317, W52458, AA723427, AW189559, AA045301, H09070, AA256210, AA503121, BE826023, AA921301, AI819232, BE831073, BE831048, AW956475, AA303086, H23150, H81373, BE831070, H23151, AW593442, BG166357, W15379, AI003129, H57853, H80453, AA587453, F12797, BE831071, AA811971, BE091742, AA379841, R80786, AA737085, AW029021, BF752382, R38552, BF354290, BE150019, T48991, BE831072, BF195285, AA503131, AA256353, F17470, AI424220, BF965507, BE929386, AI431521, AL038986, T48990, BE932245, AI381715, AI424511, AI569722, AA835425, AV757066, AW997044, BE143663, AW337583, BE065144, AA558437,

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HETJU23	333	100370 6	1 - 2214	15 - 2228		AU125582, BF338909, AV721101, AW960032, AU149216, AI479301, AA551070, AI765789, AI888129, BF689666, AW300579, AI561067, AI952933, AA699496, BF851750, AW631269, BF223599, AA977132, AW003323, AA227895, BF056547, BF056388, BF851745, AW628961, BF851053, AI499649, AA227595, AA557146, AA005279, BF999437, AI124737, W88953, BE139597, AI866470, BF690562, AW392978, BF849227, BF999431, AA524236, AA992176, AI817652, AI933331, AA005195, BF999425, AI381813, BE221278, F36543, AW087421, AW167326, F30327, BF850865, AA953702, AI242910, AA367411, AI363751, BF834497, BE048256, BE708177, AW379838, Z42044, AI351935, F01568, BG055860, AI691123, BF772332, AI783542, AI131405, W05190, AV702728, AX040389, AX040390, AK022692, AB033104, AL133630, AX040393, and AF200815.
HNOKB73	334	100448 0	1 - 1202	15 - 1216		BF672055, AI828433, AU145153, AI909113, AI831421, AW471345, AI909126, AI922310, AW511425, AW151865, AA861631, AA993238, AI909131, AI688870, AI922300, AI310077, AI620982, AI272867, AW628057, AW057746, AI623341, AW117681, AI267991, AI818511, AA487193, AA291847, AI222864, AW190743, AI914551, AI692825, AW189277, AW304917, AW055334, AI278911, AA661670, AI969389, AI909123, AA894780, BE049422, AI453695, AA911888, AI571659, AI862021, AI621161, AW627585, AI569192, AI624941, AI571426, AA194152, N67602, AA688382, BF857139, AA486838, AA291725, AW263429, AI653841, AW020368, AI453306, AW090321, N64130, AI279927, AI249255, AI926018, BF884826, AW390274, AW294466, AW361842, AI696774, AI275762, N45716, AW089415, AI262331, AI811607, BE939116, BF750734, AW608182, AI624961, BE939114, AA367257, AI687265, AI698996, AA297958, BE937479, AI701193, BF744029, BF858828, R82992, AI909128, AW167711, AW198062, N48994, AI866006, BF882878, BE940672, AW816180, BE818295, AI909134, AA194103, AC018634, AF026692, AF117709, AF140346, and AF012891.
HODFB06	335	100458 3	1 - 748	15 - 762		H99646.
HODJA76	336	100461 9	1 - 447	15 - 461		AW977567, AA907333, AA814897, AA836609, AC005567, AC002565, AC005480, AL356299, AC005520, AP000066, AC073593, AC005736, AC002394, AF196969, and AL121890.
HODJY60	337	100462 5	1 - 2212	15 - 2226		AL515853, AU133237, AI654122, AU126018, BF058308, AV725133, AW183152, BE671606, BG253097, AI948488, AI950097, AI927294, AW969418, AW275334, AI076608, BF940262, BE535180, AI417857, AI952810, BF959274, AI417041, AI420844, AI379187, AA723579, AA913702, AW394103, AW949335, AA393920, BF979295, AI093193, AI313185, AU129447, BE253357, AI017439, AA313310, AI590307, BE890745, AI346472, AA962778, AI276140, AI985266, AI336030, N98729, W96013, AI299081, AI092621, AA233883, AA232829,

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HODEF10	338	1004627	1 - 593	15 - 607	BF799949, AV719557, AW973490, AW978634, AW966032, AW949656, AW973474, AW966059, AW959597, D80188, AW975613, AW959136, AW973482, AV699447, AW966029, D59859, AV720533, AV718489, C14389, AW956397, AV720616, AW973307, AV722801, D59927, AW975618, AW949642, AV718707, D58283, AW959202, D81030, D51799, AV720211, D80253, AW959799, AW966053, AW966531, AW978661, AW966386, AW960553, D80166, D80043, AW962082, AW959570, D51423, D59619, D80210, AW966075, D80240, AW973330, AW966065, AV719822, D80212, AV718692, AW958993, AV699550, AW949629, AV719324, AV718938, AW960465, AV718633, AW975605, AW966399, AW973488, AV718931, D80391, AV720878, AV720731, D59787, AV723927, AV699866, AW964488, AW959628, AW973334, AW966534, D50979, AW966022, AV723097, D80227, AW966013, AW960473, AW965177, D80022, AW966041, C14331, D80219, D80195, AW958992, AW973445, AW975621, AW978648, AW949631, AW949643, D80196, AW949618, D59467, AW965175, AW965163, D80164, D59275, AW973541, AW966030, AV720791, D80366, AW966054, AV720203, AW964756, AW966050, AV719188, AW966062, AV718440, AV719783, AV720028, D59502, D57483, AV719468, AV718800, AW965185, AW965197, AW965196, AW973485, AW965184, AW962395, AV718844, AV720464, AV718770, AV724520, AW959062, AW964477, AW956434, AW949641, AW964468,

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HODFB03	339	100463 1	1 - 775	15 - 789	BG034836, T75233, BF572603, AI557036, BE697488, AL513776, AI216670, BF747008, T10253, BF745947, R61073, BE843957, BF746454, BE769157, BE766105, BE714429, BF744295, BE765690, BE766038, BE766098, BE766167, BE714404, F12922, BF745931, AA434502, AA465014, T05292, X74331, AJ011607, D17385, D13545, and AL121958.
HPMLN08	340	100463 2	1 - 1380	15 - 1394	BE709782, BE832694, BE709778, BE707630, AA430593, H80277, H80291, AI652995, BF383125, AA193566, AU158293, BF747189, BG260723, AA243826, BE491960, AW063724, BE222441, BE502344, AA164268, BF196258, BG170263, BE932825, AA508073, AW294783, AU155794, AI819266, BE169617, AI468739, AI082255, AI417116, AA385339, AI382168, AI701563, AI031661, AI436306, AW576939, AV715887, AI709346, AW195764, AW044458,

						BF002627, AI802164, AW340159, AA479123, AI224847, AK023738, AK023448, and AF113697.
HODEH08	341	100463 3	1 - 364	15 - 378		W44489, BF344927, BE385927, BF683537, AW406647, BF214121, BF671254, AW248978, BF675993, BF791283, AI083656, BE783427, AA340719, BF038972, BF907681, AL523352, AV697332, BE791818, D31255, AU127744, AA370162, AA488592, BF027044, AL523351, BE513340, BE270073, BF446423, BE397826, N27234, AI582770, BF095260, AA410725, AI817900, AW799742, H29999, AA331358, BF675835, AI580242, AA358813, AA370640, T97410, R07253, BF210442, AW248314, N33990, N25001, W56853, N33751, AA360045, AA371439, N28848, AA344067, BE813738, BF680023, N27913, AK001410, AL136131, AF114816, AF114817, Z59378, Z64078, Z64079, and Z54696.
HEGBF25	342	100463 5	1 - 1333	15 - 1347.		AW960487, AW170566, AA463471, AI590283, AI479619, AI356285, BE671701, AA443030, AI279424, AI475890, BF948785, AW105033, BE646579, AW469714, AA282026, AI870381, AI692574, AI357242, AW135396, AI306543, BF929181, BE856482, H24386, AA055932, AI125211, R60550, AI934615, AI979010, AA902204, AA557305, AI860938, AI566567, AI420407, D31141, H24399, AW136075, AA913241, AA055381, AI251746, AI249885, AA722942, AA328301, AW204848, AA748866, AA324275, AI698815, AA524094, AA729225, AW206983, AL041606, AA902634, BF091853, BF086880, AW137312, AL041448, AA865160, AJ009770, and AF069736.
HODJB51	343	100464 3	1 - 441	15 - 455		AV761433, BE328286, AV658560, AA468371, H52948, AA297662, AA419107, AA419014, BE545345, AA904211, AA313075, BF927768, AI268019, AA194858, BG057757, AI344962, AA644571, T74524, BG169404, AA468505, AI801563, AV754716, AI887235, AV720672, AL096791, AC008745, AL022238, AC009477, AC003982, AC008989, AC002477, AC006064, AP000511, AP000167, AC008623, AC020908, AF165926, AL138807, AL157877, AC006026, AL121890, AL109627, AL109963, AC020552, AF254983, AL354720, AL031662, AC005822, AC011497, Z97985, AL049834, AL136170, AC005399, AL157838, AC005102, AC008753, AL159997, AC002350, AC005829, AL136000, AC004166, AL163201, AP001719, AC004685, AF168787, AL031281, AL031282, AC008764, AL022163, AL133448, AL022316, AL135744, AC010328, AC022150, AC006088, AL160231, AL078461, AC008569, AC006538, AC008372, AL049643, AF111167, AL138752, AC006312, AC005914, AL162430, AL109825, AP001660, AP001711, AC005529, AL136418, AC004821, AC010636, AC002511, AC019227, AL109806, AC011442, AF196779, AC004125, AL031121, AL050335, AP001727, AC020754, AL050307, AC009314, AL137783, AL121748, AC018720, AC004840, AL163249, AC006329, AC005052, AC011895, AC005412, AL008718, AL009051, AC006001, AC005089, AC009470, AC011477, AC005726, AC008784, AL034379, AL133246, AC004033, AC021999, AL109804, AC022407, AC004983, AP000512, AL031291, AC006101, AL022476, AB023048, AL117258, AC007193, AC007383, AL157776, AC010363, AC008521, AC007021, AF190464, AL138832, AC016543, AP001748, L44140, AL139100, AC004890, AL355094, AC004895, AC002302, AL117694,

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HODEC38	344	1004648	1 - 2163	15 - 2177		AA461384, AI638162, AW974192, AW157286, AA702534, AJ003425, AW161799, AA701970, BE258604, AW162461, AI692285, AW265397, BF110566, AW163084, BE504104, AI126148, AA158404, BF110968, AJ003426, BF436206, T78960, AA573177, AI934177, AW163340, AW161342, AA158501, AW160450, AA476353, AL527124, AL523845, AW385571, BE620912, BF347756, AL524949, BF965010, BF835996, BE620514, BE392373, AU127111, BE925487, AI207818, AP001759, AP001469, AK026578, AB005543, AB011144, AJ010089, and AK001370.
HODIQ24	345	1004660	1 - 3410	15 - 3424		AU132377, AU132354, AU137607, AU120802, AV725435, AV725504, AV727393, AI907846, BF431871, AI971541, AW956982, BE542598, BF977694, BF218040, BF194954, BF572088, AU152685, BE468132, AW274295, BF326712, AV728832, AI290910, BF696191, AI458284, AA918601, BF132210, AI299489, AI306415, AA947581, AA042992, W35163, AA779334, AW470321, AW028573, AI625411, AA255546, AA451702, N40098, AA115015, BF431827, AI248585, N24288, BF087866, AW138804, H84453, AA885588, AI637730, AW970127, N32948, BE464747, AI631137, AI638290, AI637904, AW470388, R52158, R85459, AV704648, AW295739, BE719830, AA514606, BE714126, BE813424, T71262, AA708740, AU156698, H50037, AI085037, AA256661, AI587226, BF821343, AW169353, R23147, AA115014, AU151591, AI701772, AA493555, H98720, BF845314, D81437, AA946917, AW168776, D80972, AA368643, N27158, AW805841, AI922080, AA931683, AA977047, W20387, AW130610, AA247897, BE827896, AA962286, AI217571, AI702845, AA975966, AW002803, H49993, AI002410, BE964392, AA042824, AA902321, H84454, AI918223, BE813423, AB037840, AK001495, AX034574, AK001892, AX009324, AX009323, AX009319, AX009322, AX009321, AX009326, AX009318, AX009317, AX009325, AX009320, AX009316, A91748, AI656001, and AI656713.
HVVDD56	346	1004887	1 - 2637	15 - 2651		BG120635, AA643174, AI621233, AW978320, AI309847, BE813594, BF594198, BF208601, AW080955, BG249103, BG249038, AU154737, AI912367, AI969341, BE813560, AA083478, BF093613, AI249906, AA720586, AA808246, AI375180, BF131476, AA702882, AI356456, AI082207, AW951861, AW026304, AI378093, BF922917, AI275444, AA534350, AI074286,

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HTHDV01	347	1004950	1 - 2166	15 - 2180

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HVVDJ95	348	100515 3	1 - 1286	15 - 1300		BE744159, BE735588, BE562290, BE543899, AV703356, AW951513, AI869315, BE397694, BF344590, BE222785, AA147088, AW888880, AI421559, BE048028, AW131473, BE904977, BF593805, AI860630, AA307132, BE693231, BF195558, AI859194, AA554706, BF848110, AA779596, BE671642, BE671636, BE772850, AI817963, AW131732, AI131006, AI131235, AI298506, AW360926, AA132115, M79142, AW085550, BF827911, R32144, AA996236, AA827499, AW961823, BF847182, AI864171, AI810869, AW083177, AI279054, R21586, AI683076, R32143, R49059, AI682910, AW959257, BF340401, N48917, BE764109, W07596, H03637, T32822, AA902240, AI951120, AI302680, AA031941, AA555053, BE502039, AA557656, AI795815, AI874400, AW806659, AW020184, AA318860, AI909782, AA327450, AV655438, BE242543, AI935791, AI702044, AI913289, BF432516, BF848050, AA132349, R49185, R33114, AI948650, F03268, N46415, AI419183, T29712, AA147145, N20886, H19201, AI539258, BF739937, AA904255, AI356503, BE140381, AA348337, AW806516, R62224, H03636, BE220594, AI636387, AW515881, R33262, AW166586, R64601, BE328664, AW016275, AA581451, N78707, AI915762, BG117733, AI540261, AW997810, AW889502, AA319725, AA985516, AW169409, AA319821, BF340433, AL118620, AA348452, BG058342, AI962093, BE719358, AW883253, BE719354, BE885116, BE735840, AC000395, AB037729, AK000242, AK024575, AF295773, L07924, L07925, AF295780, and U14417.
HODIY29	349	100523 6	1 - 2101	15 - 2115		BF850023, AA904772, AI936458, AW328025, AV751671, AW629145, BE695496, BE695579, AW024363, AI198959, BE695471, AI349413, AI341534, BE695595, AW511051, AI218318, AI087061, BE695610, AA609271, AI366723, BE695599, BE695474, AI093675, BE695613, BE296186, H58337, W03883, AA279464, N65952, R91414, H78868, AI630666, R70876, W79400, AW382181, AA362029, BE895116, BF089826, H28788, AI480262, AW117400, H58726, W79513, H80111, BE764221, BF365918, BE068813, BE695504, BE695512, BE764265, BE695494, H63582, H63540, BE764277, T05675, H28762, H66903, H66858, BF365940, BE764232, BE816201, AL079551, AL079533, AA094526, N94211, BE271751, BE768528, AU126895, BE816196, BF331621, BE764248, AA279129, R15357, BE783140, R17312, AW805680, BE545692, BE778796, BE764309, AI783879, AL079534, BE695609, BE774755, BG170522, BE695566, BF875922, BE708280, BE695475, BE695472, W42817, BE815092, BE768557, AI567131, BE695450, BE695612, BE695598, AA091206, AW837053, AU128777, BE816203, AW887482, BF305224, BF918481, BF968385, T77720, AA568428, AF139897, AP001717, AP000114, AB028942, AP000303, AP000304, AP000046, X63071, X63753, X63754, X71604, AL356276, M36428, AF193607, AF193597, S47241, AF193600, AF193598, and AF193599.

HOELP29	350	100535 9	1 - 1308	15 - 1322	AL530557, BE791049, BE618996, BG257624, BE731913, BE886771, BG114069, BG116664, BE856856, BF797021, AI741539, AA877855, AI800932, N32038, BF432001, BE898057, AI694373, AI808071, AA262486, AA903806, AI138931, BG255357, AA468735, AA470769, AI138466, AA954750, AI151371, N29514, AI189798, W49771, AA814845, AI183296, AI357130, W70171, AA280787, W69944, AI186447, W69834, AI499111, BE908525, AI086208, AU129984, BG025691, W69906, H87149, AI469927, AW971625, BG250733, BF325889, BE141551, AL527393, N57458, BE696978, BE696980, AA035645, BE891620, T48534, AI188861, AI160592, AW516114, BE327105, W30843, BF745219, AI619930, BE763528, D78335, AB030700, and AA280793.
HWLFG04	351	100538 4	1 - 1040	15 - 1054	BF309040, BE727908, AW080447, AI813764, AW156901, AI624222, AI954032, BE727602, AW473780, AI861975, AV711593, AW511541, BG117850, BE892765, BE301686, BF941321, BE727148, BE877682, AA669760, AU136925, AA604124, AI186207, AI951492, AI016700, AI125916, AA081009, AI673719, AU160400, BF211379, AA173953, BG033959, AU146424, BG164551, AA666305, BE873924, AA100874, AW304292, AW471151, AW513002, AI580161, AI078833, AW068925, AI811621, AA666358, AA534849, BE786612, AA662226, AI432440, BF732965, AU150305, AI139223, AA130980, AU155685, AA707346, AA724885, AW474759, AU157841, AL120428, AV711263, AI141060, AI244874, N66401, D53110, BE834286, T57109, AI288812, BG104684, AA099214, AU156023, AI537130, AI167469, AW263441, AA173643, AU157341, AA187544, AI357914, BF084240, AA938617, AA632832, AA157933, AV714164, T33607, BE834321, AA807994, AI381658, BF086680, AA634268, AA315460, AA224251, BF086663, AA557374, T90497, AA639802, BG117431, BG118933, AA826543, AA551431, AA282337, BF726089, T69431, BF981803, W28397, AA948655, AI128023, BE727393, AA256923, AA130975, AA565098, BE728536, BG029544, H89626, BF882766, AA872943, T36145, AV748147, AA632190, AV704174, AA330174, AA130436, AI686635, AA130437, AA076099, BF086506, AA729737, AW392904, T92925, W04825, BG253169, AW802882, AA009665, AA356814, AI263840, BF211293, AA070450, BG166290, AA810386, AW392890, AA235380, AI954229, AA041269, AL520247, AA481985, BF215385, AI744430, AA928912, AA731542, AI208724, AA777668, T90593, AA887638, AI559330, AI801006, AW975764, W46171, R86972, W44443, BE928509, C02751, T25894, AI581770, BE168358, AA084634, AA358962, AW392839, AA771848, BE764142, AA894945, BE182212, BE543242, T10776, AW392836, AA394224, AA878485, BG168089, BE163936, AI582590, AA197336, BG180181, AI833003, F35679, AW768788, AW190598, AA398137, AA481889, BF726929, AI826585, R27279, AI557490, BF061257, AV702131, AI766834, AI033007, BF738475, AI811690, AA627813, BF086524, AI241386, AI248407, AW820874, T93041, AW392848, W46535, AU120330, AI096806, BE876198, BE890386, BF913319, AU137916, AI833030, AV751052, F23284, D25873, BF082805, AW852076, AA301281, AW959407, AX014875, AX017985, AF090891, U33821, AF268075, AK000098, and AC004549.

HYAAC49	352	100551 1	1 - 769	15 - 783	AU139442, BE569198, AU135922, C75131, AV718280, AW390194, BE865872, BF240773, BF571465, BF183939, R24772, R14521, BF184986, AU127909, BE380148, R35572, AA385863, BF795902, BG115301, N83156, BE560295, BF243095, BF805901, BG037006, W86403, BE890587, AA322376, AU128221, BE885883, BF218257, AA447000, BE171121, BF240001, BF666929, BE886808, AA496772, BF830589, BF102486, BE548882, BF211322, BE154533, BF434758, AI983937, U87166, AF001628, AF260262, AF006516, AF176784, U17698, AJ277071, AJ277068, AJ277067, and AJ277069.
HCOOA71	353	100584 3	1 - 680	15 - 694	BG032088, AW674754, BE793744, BE301427, AW001177, BF796457, BE222626, AA676823, AW245046, AI742447, AI086381, BE382943, AI038253, AA631108, AI432174, AV740792, N36161, AI354418, AI138537, AI435564, AA622991, AI432169, AI288565, AA412597, AI298942, AI628257, AA769383, BE731107, BF025815, AA262361, AI333049, AW138279, AA489757, AA426358, AI185088, AW071200, AA678330, AW974396, H81770, AA383464, AA325218, BF663601, AI826476, AI570948, AA758452, AI659519, AW975605, AA953294, AI351414, N94604, AI086406, AI858778, BG222816, AW474212, AI351407, AW328179, AI201546, AA426521, AA649981, AA700598, AA489649, AI085660, T99013, BE770129, BE770165, BE387301, AA827478, BE770154, AI382758, H29471, AW629408, AA852445, AA559102, H99900, F18425, BE018615, AA377901, AA714184, BE792052, BF932098, AW797213, BF898501, BE302202, R07444, AA359193, AI797445, AA639044, BE206518, AA357798, AA648070, BF765959, BF768917, AA094140, N57963, AW361814, AV744851, BG222117, AI745563, BE727188, BE170556, BE407088, BF305624, BE513977, BF129902, BF845366, AI795892, AW363952, U46389, AA357516, AA373724, AI401076, AA357714, Z96932, AF116691, I89947, and AA232683.
HOUFB45	354	100597 4	1 - 866	15 - 880	AI825882, AI696873, AI738563, AW103989, AW613147, AI268306, BE793730, AW770856, BF061575, AW051548, BF739812, BF958201, BE273154, AA858218, AI090497, AI075184, AA815445, AI381954, AI284912, AA235085, AI571911, AI218189, AA885429, AA626489, AA922962, AA424585, AW078477, AI832643, AI743823, AI221668, AI690707, T34988, AA769343, BE348685, AW769161, AI952634, AW452891, AA976512, AA687740, Z40231, AA235212, BE246574, AW572211, BF797899, AI014979, AW603755, T82196, AI766582, AI915196, AW078592, R43900, AI869134, AI524517, AI635964, T35732, N24554, AI866546, BE074731, R43261, T32374, BE265660, AA206547, F01511, AW079587, T82197, BF530913, AA235496, AW450279, AA625573, BF337280, AW979330, N33999, AI312812, BE273206, AA693982, BF927110, AA400118, BF892007, BE874163, BF814420, AW262593, AI471271, BF892003, AI003314, BF904265, BE965707, AI174819, AI344935, AV712612, BG257545, BF934149, AA648447, AB002328, AF072441, Z92546, AP000353, AL390166, AC009361, AF061947, AF308801, Y09972, AF130110, AL049430, AL050389, AF056194, I46765, AF090900, Y12226, AB029066, AL133028, AL133015, AK000502, AK026104; AF151076, X63530, AF114168, AK027114, AK026600, AF175903, AF177340, AK000285, AF124435,

					AB052191, AF202636, Z48796, AK027200, AX015416, AK027137, and S69407.
HUSJI14	355	100601 8	1 - 2396	15 - 2410	AU125044, AU125106, AU124136, AU132115, AU142302, AU123505, AU128772, BG259270, BG104503, AU127066, BE877587, BF102972, AW961540, AI819062, AW137042, AA218870, AW268435, AU159649, AI914414, BF571164, AW965326, AW021609, AW859986, AW960460, BF667479, AW859994, BF571923, AI290998, AU132875, AI805453, N42226, AA453340, AI143590, AI961984, AW965469, AU133448, AA534880, AA805995, AA478879, AA315171, AA478622, BG250380, H10486, BF910659, AW083409, AI279728, AA022968, AI859003, AW820411, AI971338, W27642, BE940037, R35417, BE940013, AA810040, BE940009, AA909119, R71284, H30337, AI743639, T17061, AW820415, BF913401, BE698731, H97022, BF243145, BF002853, AW604825, R13747, BE174730, AA332955, AA600911, AI086130, T87426, AA330024, AI092372, AJ239430, AA461371, C01331, AI224398, N41982, AW752484, AW752492, AW051138, R14406, AW452485, AI439708, BE694190, T99701, R08328, AA091602, R58882, R16157, AW500586, AI382652, BE934080, AA252088, AI061448, W27426, BF088818, R08381, BF088814, BE880142, AW820413, BF589424, BF229364, BF913396, AI620838, BF088832, R19923, T99096, BF229365, AU154390, AA327941, AA190558, T77110, BF356534, AA738469, BE856271, AI697789, AA588155, AU151002, AU148839, AI086357, N30259, AI624125, AI859524, AA464855, AA946796, AW470143, AU153720, AW368233, R44163, AI183953, AI092159, AI803728, AI418332, BE173781, AI038144, AW022885, AK022572, AK001676, AK001754, and AF052123.
HMCDB21	356	100605 5	1 - 556	15 - 570	BE464861, AI652330, H91834, BE703983, H91879, AA759248, AA769818, AW593481, AA902687, BE972738, AW235775, AI379370, AA974129, AF100774, X57477, X57689, X57476, X57688, and U79668.
HSDEY08	357	100614 2	1 - 1956	15 - 1970	AL537989, AL533695, BG170919, BF972004, BF345100, AW026975, AI937448, AL532622, AI806907, BE378539, BF967058, BG115124, AI869308, AI150559, AW007470, AW149368, AI360337, AI479472, AW411234, AI199048, AI199509, AI300927, BF341774, BF688178, AW511458, BE296272, AI655154, AI652153, BE270387, AI377853, AI609567, AF147181, BE295186, BE270395, AI500244, AW965710, AI878920, T06902, AA354921, AI027477, AF147185, BE295192, AW050894, R72213, BE858989, BF886588, AI703318, F05831, AA077697, AA077739, AA077344, AA076971, AA506828, AW885532, AA357567, AW885629, BE811342, BE773565, AW002991, H30179, AA077004, BE269771, AA077615, BE701815, R73305, AA077477, BF953004, BE811355, BF509539, AF147184, BG149726, BE773538, BE833501, AF147190, BF247437, BF090978, H45089, AA349590, AA077534, AA402202, AA405835, AA402203, AC021097, AC005486, and U66619.
HOOJT92	358	100621 5	1 - 2631	15 - 2645	AL044704, BE271772, BF796439, BE746386, AL044621, AI051986, AA127622, AL046283, AV702820, BG121331, BE746300, BG176577, BE747570, BG035456, BE857140, AA121525, AL044622, BE315418, BF796863, AA046983, AI038252, AL040929, BF431928, BF819832,

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HNORE03	359	1006250	1 - 848	15 - 862		AV700281, BF111882, BE858353, BF509559, AU144292, AI797616, AI911080, AI417220, AW592473, BF509133, BE677749, AW023813, BE465084, AI207263, AA393266, AA398669, BE173478, BG115116, BF792961, BF970768, AL043345, AI909697, BG179993, AI812015, BF343286, AW161156, BF133371, AV702833, AA641818, AW130930, BG105895, AI923989, AW161579, BE789764, AW827206, AI500061, AI572021, BE927769, AW051088, BG113188, BF814527, AL048656, AI859991, AV654374, AL047275, AI525653, AI567582, BF856052, AV757737, AL514093, AI783997, BG058150, BF527014, AV714085, AW132056, BG164575, AI863382, AI783504, AW020095, BF970652, AI434741, AI284131, AW118518, AI702073, BF895953, BE011880, AA814407, BE877467, BF905454, AI249497, AL040694, AV709522, AW162194, AL135517, AI536685, AV650703, AW983783, AI570807, AW071417, AW151136, AL514097, BF814357, AI564719, BE538997, AI620089, AA449768, AI288305, BE886844, AW983829, AI886753, AI933589, AW026882, AI635067, AI923370, AI868931, AW149925, BF924869, AL513937, BF812960, AI537261, AI539771, AI432030, BF812938, BF752245, AI612852, AI590630, AI886415, AI634251, AW148408, AI862144, AI433157, BG029829, BE545500, AI886123, AI499285, BE927743, AI472536, AW168485, BE880498, AW827103, BF812961, AI866090, AI620284, AL039086, BG029086, AI250369, AI445992, AI445990, BG261282, BG259763, BG260287, AI891084, AI866770, BF814420, AI633125, AL046618, AV682575, AW983832, BF812936, AI698391, AI627988, BG036846, BG256090, AI677796, AL079963, AI915291, AW152182, AI640729, AW022699, AW089275, AI582932, BF726207, AI889189, AI521560, AL514473, AI683128, AI890907, BF856017, AI473536, AW008166, AV741327, BF816037, AI824576, BG257535, AV682479, AW162118, AI862139, AI270183, BG033732, BG110517, BG109857, AL119863, BG164558, BF338002, AI815855, AW238688, AI670009, AI537244, BF814450, BG036614, AW834302, W74529, AI525669, AV759831, BE963838, BE536058, BE964614, BE785868, AL036403, AV682787, AW020693, BE620444, AW673679, AI523806, AI623941, AV734318, AI537677, AI971615, AW051059, AV758477, BE546870, AI860003, AI868204, AV735353, AL048323, AV760409, AI919534, AI648684, AI150993, BF245586, AL513991, BG113299, AL048340, AI863321, AI368943, AI624293, AI284517, AW302988, AI889376, AL047422, AL037030, AI345745, AL036631, AI286256, AL513775, AI269862, AI873644, AI440448, AL513817, F27788, AW192652, AI863191, AI802542, AL514919, AW827249, AI432040, BE047852, AI242248, AW083778,

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HPCTS21	360	1006317	1 - 2644	15 - 2658	BE738670, AW969031, BG033369, AV723811, BF185746, AA496142, BG167304, BF526442, AW071692, BF691470, BE219222, AI569569, AW411538, AA768873, AA496143, AA975521, AI286012, BE737698, AI476316, AW473390, AV719519, AW593323, AA714205, AW341557, AA451627, AI697737, BF515831, BF207441, AA504417, AI685337, AW301603, BF693927,

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HFATL31	361	1006399	1 - 986	15 - 1000	AI808778, BG054989, BE857601, BE885329, BE881349, AW304934, AW962192, BE712961, AI880009, AI815709, AW163154, AA526969, AI150509, AW161293, AI146808, BE712850, AI088675, AA722187, AI990261, AW451154, BE712843, AW449490, AW161970, AA115532, AI983943, AI492618, BE712919, BF589503, BE712889, BE713004, AW162759, AA719439, M79223, AI804223, BF939296, AW972384, H97676, AA552629, R76719, H41614, D80207, T31248, AI796667, R75663, H13188, H13189, H18312, BF886117, BF762457, W23735, AA115533, AI203992, H97439, D56295, AI832722, W35334, AI432110, AA084432, AW157796, H18170, H40836, AI916646, BF977122, AW083168, AA602325, BF338333, BF131373, AI434123, AW880236, BF726099, AI654105, BF726100, BG029058, BF339019, AI086254, AL118520, AR075096, U05784, AF119856, AL050015, X00861, AF113676, X87224, AL359382, U72882, AJ131955, AR059958, AL389951, AL133014, Z97180, AF218005, AF159141, I00734, AB016496, AF217972, AR095619, AL355713, AR095635, AB007812, AF188698, E00617, E00717, E00778, and AF144093.
HE2JE77	362	1006445	1 - 561	15 - 575	AV763983, AV726509, AV724045, AA484895, AV717042, AA491575, BF665912, AV752886, AV704858, BG171129, BE295759, AV759175, BF212041, AI133335, AW954146, AV718303, BF697058, BF575185, AV716398, BF695081, W40182, W19621, H74259, BF574703, AW959573, AV763693, AV714436, BF747404, AV761405, BG171057, AV760476, AA298804, BF666224, AI929471, AA296780, BE781598, AI815460, AI541337, N29084, N36756, H87040, AW959568, AV738107, BG121116, AA297887, BE513823, BF979410, BF697403, D56475, BE706808, N98570, W31214, AV712776, BE693502, BE513154, BE065121, AA298012, AV716021, AV751542, BE065135, H83627, AV690262, AA298961, AV660329, AA297588, AW371999, BF994508, AA297029, BF214397, BF980359, BF239553, AA297868, AW748993, AA297949, AV712048, AA297436, AW362946, AF121166, BF805496, BE774733, W85999, BE828311, AA257047, BE774859, AV732932, AW576707, AI126303, N77409, AV694284, BF765220, AI086042, BF807758, W21542, BE693520, N79915, BF335710, BF807687, AI885697, BF807695, BF807764, AI816403, BF378424, AA724019, AV722344, AI740446, AI001781, AI880801, H75925, AA412714, AA091861, AA251819, AA489131, AW968954, BE222943, AR051263, AF078848, AF201948, and S54914.
HCBNX87	363	100647	1 - 934	15 - 948	AA195189, AI872284, AW770838, AA195225, AI970956, BE219722, BE856129, BE348445,

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HNTDJ68	364	1006483	1 - 3266	15 - 3280	BG255574, BF797869, BF688018, AA088346, AL046406, AA626207, AA148554, AW271825, AW771157, AA122367, AA121480, AI123736, AI074017, AA419583, AA250725, AA150178, AA308446, AI470940, AA903233, AA088345, AA055608, N22856, AA253428, N45057, AW770308, AA055472, H27374, BE676183, AI221091, AA993376, AA401499, AA400257, and BG230996.
HTRAA05	365	1006512	1 - 561	15 - 575	AI742386, AI524073, AI401286, BE561354, BE295468, BE267749, BE513336, AI459535, AI889934, AW962270, BE712449, BE712458, BE695348, BE712281, BF106390, BE560144, AI927392, BF727086, AI160850, BE792824, AW081202, AW029525, AI814545, AA701033, AV703327, AW104087, AI886582, AA575902, BE695412, BE712223, BE712220, BE695398, BE712549, BE695418, BE712279, BE712505, BE712319, BE712008, BE695425, BE712770, BE695432, BE712628, BE712414, BE712498, BE712213, BE712504, BE695389, BE695426, BE712510, BE712170, BE712624, BE712232, BE712047, BE712014, BE695407, BE712104, BE712166, BE695391, BE695427, BE711646, BE712506, BE712331, BE695413, BE695403, BE712285, BE711560, BE712102, BE712622, BE712773, BE712502, AA770666, BE695378, BE712050, BE695420, BE712334, BE695373, BE712544, BE712724, BE712548, BE712555, BE712553, BE712222, BE711652, BE712547, BE712787, BE712108, BE695422, BE712212, BE712103, BE695419, BE712211, BE712421, BE695416, BE695424, BE695401, BE695384, BE711604, BE695436, BE695415, BE711760, BE695364, BE712430, BE712326, BE695429, BE695417, BE695404, BE695431, BE695423, BE695408, BE712231, BE695360, BE712670, BE711986, BE695409, BE712391, BE712668, BE695375, BE695395, BE711558, AA976480, AA767170, BE712324, BE695428, BE695402, BE695344, BE712587, BE695345, BE695374, AW591351, BE695382, AA576980, BE711587, BE712454, AA384751, BE712392, BF726553, BE712100, BE712507, AA687454, BE712322, BE712771, BE695414, BE695400, BE695434, BE712171, BE695362, AI367957, AA687513, BE711670, BE695381, BE695358, BE695368, BE711532, BF112286, BE712160, BE711502, BE711500, BE711535, BE695405, BE695346, BE695361, BE711842, AW079821, BE695377, BE712221, BE712045, BE712162, BE828330, BE695433, BE695421, AA352952, BE695355, BE695365, BE711508, BE695351, BE695383, BE695359, BE695379, BE712101, BE695350, BF837811, BE711614, BE711657, BE695352, BE695376, AW370204, AW510617, BE712003, BE711603, BE828321, BE695392, BE695410, AI460272, BE695393, BE856500, AI309112, AA907009, BE712456, AA411532, AI739011, T71962, AA507928, BE695430, BE828315, BE828313, D60602, BE828312, AA317838, BE712474, AV688621, T81771, BE327944, BE695356, AA662912, BE711542, BE940444,

					AA522896, BE695380, AW071632, and T71693.
HMTAL96	366	1006635	1 - 1821	15 - 1835	AU121947, AU133408, BG107816, BF978353, BG167070, AU136479, AI912625, BE787533, AL043108, BF978689, BG118584, BF575979, AW946781, AA541465, BE896118, BF242492, BF673227, BF574674, AI769406, BF573737, AI677825, AA843784, N90942, BF679753, AL133947, BF340046, AI122639, BF338412, AI956122, W58349, BF674910, AW946784, AI146802, AA433844, AV721278, BF213289, AI829684, AI248810, AW148927, BE549681, AI634356, AI693209, AA313329, AV721952, AW015279, AV721448, AW970646, W48807, N33995, AA770568, BF570691, BE046360, AI200909, W52177, BF670447, AW337556, AI925678, AW137200, AW946872, AA740996, AW473986, AA044616, AI088578, BF986183, AI302975, W58474, BF572827, AA176436, BG149747, N36852, AI090980, AW440100, AI814300, BG031130, AW403227, AA846487, W52178, W60313, W60262, BF577093, R80598, N35139, AW080740, BF930195, N46123, BE891377, BG231991, R80597, AA178883, R23907, AI244465, AW027841, AV707552, N36871, AA262561, AA626808, AI127632, R24938, AA158096, AV705840, N46141, AA165152, AA165180, H94816, T28111, H89174, AI523244, BE539497, AW876080, AA885512, N32999, AA042803, AI291968, AW271335, AI374631, AI928012, AI582354, AA905984, AI391678, AA654121, AI470822, AI659820, AU150290, AI435866, AA478972, AI672499, AA782245, AI683540, AI242454, AI963948, AA098811, AW974863, AI970953, AA098979, W47019, N24550, AI656583, AA098926, AI811590, AI346328, AI702054, AI926667, AI565050, AI669676, AW300195, AA626702, AI078689, D20104, AI910690, AA991913, H80964, T70014, BE041620, AI432060, AA329386, F00987, AA677620, AA450363, BE328391, AA100143, R82731, AV749441, AI912968, AI681692, BE219987, N89579, BF575528, R23125, R23127, H83940, AW404323, BF446671, AA730321, BE253861, AA069494, AA808762, AA370257, Z28753, T29433, BF732515, AI365551, AW502459, AA243213, T39145, BF530380, AW795398, AA973669, W46200, BE183279, AA836447, W23989, BF105047, T39150, W17101, BE041692, BE827333, N91885, AA453560, D45259, T10404, N47782, AA091310, AV749903, R23998, T27528, AA165310, AA248615, R23906, AI420657, BF240034, AA809895, R31791, BE006042, AA089814, AV718352, BF447937, BF003074, AA863104, AI095737, BE220393, BG236248, AI420216, AI597664, AI972622, AA523550, BG036924, AI674511, BE673195, BF446200, BE550809, AA913502, AI218901, AI827982, BE674363, AX017503, AC018682, A93912, AL139099, AB031482, M31470, A93910, D49727, AF196993, AF197014, D50264, D49726, D49725, R62747, AA853568, AA916254, and AA969277.
HDTJP21	367	1006858	1 - 693	15 - 707	AI911957, AW804755, AI862391, BE067582, AI301580, BE067581, BG033220, AW817932, AI591299, R62701, AI590522, AA502683, AL040054, AA634017, BF991208, AW273830, BE261047, AI344810, AW021774, AI590459, BF767878, AW302983, AA579469, AI870204, BE243098, AI345123, BF854038, BF810071, AV710482, AI597820, AW303254, BF832078, AL133668, AA077776, BF925233, H05073, AI345550, AA634889, BF149427, AA654781,

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HISEQ81	368	100694 3	1 - 500	15 - 514	AW901261, AA251070, AW967582, AA663366, AU121481, BF903105, AC007883, AL356115, AC078847, AC009276, AL360078, AC016617, AL035663, AL109922, AL139090, AL121969, AC008085, AC009518, U85196, AF045450, AC006023, AC004707, AE000660, AC026439, AL138718, AF135487, AC004897, AL163280, AL031390, AL133247, AL162430,

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HODFH02	369	100695 3	1 - 603	15 - 617		AW966385, AV700495, AW973541, AV718487, AV720211, AV720729, AV720104, AV719632, AV719822, AV701335, AV701332, AV701248, AV701431, AV701043, AV701017, AV701357, AW966342, AV699866, AW975623, AW973470, AV720616, T06155, AV718427, AV699746, D88547, and AC003010.
HOCPP18	370	100723 0	1 - 759	15 - 773		AI743840, BE877930, BF028625, AW968831, BG171528, BF244687, BF034731, BE738082, BF696564, BG249379, BE262610, AW610031, BF675618, AI168679, BF184298, AW582660, AW610024, AW610015, BF432167, AW582658, AW582645, AI368790, AW582649, AW404414, AA635047, AA977202, AA255745, AW609460, W74224, AI189196, W19875, AA423814, AW873607, AW674957, AA700205, N34074, AW673317, AI693774, BF207680, AA490434, AA811988, AA687682, H59322, AW675671, N25686, AA043487, BE738236, AA384027, AA970715, W03959, AA099633, N91486, AA844086, AW970706, H64607, AW361070, AA576387, AA527550, AI380149, BG180768, BF742317, AI149307, AI139270, BF334168, AA643654, BF965959, AI018593, AA513014, AA101966, BG180833, AI089738, AA419058, AI041791, AW139976, N73897, W74225, AW361045, H70242, AW024571, AA126714, AW271818, AI143332, H82629, AW958804, R26807, BE047049, AA987943, T85639, AI857573, AV687372, N22461, AW268579, AA090516, AW651630, AI244767, AA877283, BE041685, AA426291, BE765584, AA136056, AI819235, N56136, AI241275, T79549, N56398, R26004, AA889245, BG153704, AA641594, AA873098, AA757925, AW879744, AA043488, AK000666, AF150100, AL163279, AF150101, AF152353, and AF150102.
HODFP91	371	100794 1	1 - 1747	15 - 1761		BG253213, BF681335, BF372572, BF679493, AA420666, BF678593, BF327033, AI804263, AV704486, AI275402, N33388, W78024, AI083839, AI337610, T92186, T89120, N23972, BF371272, AA658363, BF370329, AI798226, AA253483, AI216498, AA234181, AI216502, R59949, AA253313, BG105540, N31873, AA225664, T89209, AW593695, AA662620, AA528445, AA513944, BF326921, AL042210, AA179786, AI669285, AW964036, AA352063, AI080345, R59948, AI344783, AA180503, BF891183, AW515141, AW997169, AA225610, BE940088, N98709, AA206457, BG003461, AR070464, and AL359561.

H6EDU06	372	1007976	1 - 574	15 - 588

AV706787, BE907476, BF026598, AW070517, AV721296, AA156834, AI553893, BE675928, AI288705, AI762669, AW273834, AW024561, AI312660, AI138250, BE672892, AA626719, AA594341, AW974501, AI219985, AW071929, AA828157, AI309908, AI057511, AI268592, AI286041, AI870386, BG222673, AW303596, AA156597, AA812762, AI039165, AI024129, AI089622, AA456739, AI924451, AA989383, AA482452, AI803068, AA417820, AA994692, AI051535, AI801913, AI672921, AI800826, AA494488, AA455184, AI025564, AA954675, AI807763, AW952786, AA862743, AA887974, T98015, AI240669, AA977347, AA972180, AI368505, W24116, AA933043, AI784667, AA934066, AW183454, AI868633, AA907741, AW663428, T86139, AW205935, T89455, AI245098, AA513366, AA515593, AA338859, AA813534, AA115080, BE672891, AI381801, F17301, C03097, AI659028, AA216001, Z42400, N91938, AI913851, AA992249, Z19268, AA365163, AI420340, AI656368, AA648946, AI583724, AA992479, C03931, AA770117, BE185666, AA479458, AV702417, AW964409, AV729376, AW960655, AW954134, AV652001, AV651955, AW963027, AW951270, AV725153, AV706417, AW964585, AW953807, AV702789, AW949478, AW962386, AV709273, AV703790, AW964440, AV709092, AW950443, AW960601, AW952403, AW952183, AW959806, AV656903, AV661704, AV697196, AW952751, AW956075, AV645936, AV709587, AW955723, AV658084, AV692600, AV650315, AV659389, AV697880, AV727613, AW955900, AV656373, AV726010, AV655280, AV660258, AV647789, AV708109, AW959521, AW956474, AV659294, AV727787, AV703146, AV686060, AV725745, AW951239, AV686064, AV660608, AV728148, AV659322, AV726156, AV654908, AV726590, AV656478, AV698545, AV709314, AV653353, AV708381, AV654070, AV660728, AV691080, AW951281, AV702385, AW949802, AV658275, AW955662, AV703669, AV707979, AV658751, AV727003, AV709580, AV725208, AV725582, AV708786, AW957517, AV659547, AW959543, AV727526, AV707155, AV703169, AV651920, AV725618, AW954439, AV727510, AV725633, AV707088, AV652156, AV728518, AV702266, AV725577, AV725033, AV706223, AV728924, AV725617, AW954206, AV727935, AV707863, AV725991, AV707304, AV696931, AW964421, AV726619, AW952410, AV703062, AV727822, AV699089, AV705135, AV701874, AW950888, AW962444, AV703501, AV702772, AW954237, AV701180, AW950258, AV707401, AV701183, AV709660, AV704585, AV709935, AV654035, AV707652, AV707654, AV728721, AV707663, AV683994, AV704042, AV654282, AV729220, AV709880, AV697288, AV698290, AV687035, AV706882, AV704847, AV694836, AV697498, AV702954, AV686420, AV694812, AV727238, AV682997, AV696866, AV727126, AV707656, AK026514, AF151894, AC004789, AX047063, AR050070, A62298, AF217994, Y08991, AX047062, A82595, A82593, Z30183, AX047064, U94592, S68736, AX009343, AX009341, AX009337, AX009335, AX009345, AX009342, AX009344, AX009340, AX009339, AX009336,

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HPCRD26	373	1008013	1 - 1320	15 - 1334	AL522813, AL522021, AL515238, AL534210, AL527634, BE881394, BF967335, AL522812, BG168951, BE547168, BF683070, BE018646, BE251740, AL120106, AA156075, AW007510, AW772448, AL515237, AA557210, W81295, BE970056, BF967686, BF511071, AL535783, AW161414, AI905116, AA128693, N69846, Z43685, AW006138, AW274433, BE903335, AW594670, AI521862, AI905108, AW027481, BE302221, W17116, AI695301, AI300237, W93915, AA378300, AW793014, BG180670, AA866170, AA155990, AI655474, BF934862, AW084679, AW264238, BF765898, AI384123, AI357889, AA248880, AI367177, AI918724, AW304833, AI816910, AW264332, AA701939, AW303940, AI285409, AW166173, AW235873, N83196, AW890020, AI565254, F25724, AW384463, AW384462, AI204007, AW384518, AW384495, AA630995, AW384515, AW392814, BE672909, BE156493, R17296, AA055886, BF439599, AA249576, AA772667, AI660862, BE567686, AW384559, AA630973, H77417, AA249786, BF763245, AI291050, AI278942, AA658504, W81238, N98875, AA503728, AI015881, AA261778, AC005915, I89946, and I89945.
HSIEH63	374	1008027	1 - 757	15 - 771	BF591295, AI223817, BF064033, AI432306, AI732756, AI732256, AI827789, AW270969, AI458391, BE826171, AI820678, BF062424, AI734150, AA487683, BE645984, BF002863, AI073913, AA487468, AI521059, AI906906, AI906910, AI905072, T94990, T94936, AW015443, BE075729, BF512129, AA708803, AI810047, AC004993, and AF106066.
HPASD51	375	1008071	1 - 819	15 - 833	AW753589, AW959236, BE742519, W32940, W15186, N73147, T82084, AA294934, AA211695, AI905700, BF032776, AA354566, AW837086, AA468796, and AC007655.
HCOQH27	376	1008154	1 - 2570	15 - 2584	AL536332, AL515984, AU125142, AA639765, AI281923, AU125056, AW953648, BE734342, BG167105, BE794775, BE729038, BG260021, AI372989, BE729258, AI720031, BE677682, AW088074, AW300735, BE789911, BF206718, BE408591, AI768419, AI768875, BG027265, AU135162, AA482024, AI745443, AA514479, BE046393, AA627864, AI928477, AA528026, BE391197, BE395201, AA846720, BE391155, BG166973, AW104771, BE741552, AW673933, AI017373, AL515985, AA527494, AI215852, AI871626, AW205622, AA045396, BE390376, BF111620, AW612025, AW291747, AW295357, AW087156, AA722864, AI694451, BE076330, AA574156, W07767, BG001290, AI613494, BE515246, AI630897, AW959218, AA866004, BE671294, BE778573, N21002, BE503277, AA436970, AA577399, BF087009, AA485992, AI609811, BE567267, AW594105, BE745288, AW614636, AA987612, AI373242, AA595033, AW602847, AA908276, AA442981, AI261446, AW271584, BE277529, BF224222, AI858763, AW577571, AW297117, AI914132, AI086874, AA946951, AI864703, BE675612, AI365469, AI089624, AA417570, AI205853, W76670, AW779982, AI797948, AW975076, AI801899, AI654944, AL134914, BE275008, AA045080, AA315298, H17040, BE731460, BF868517, AA281453, W80506, BE729487, C06206, AA458469, W72604, H85386, AI261797, BE348343, C05666, AV742478, AW951164, AI500450, BE774706, BE791627, BE796924,

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HNTBU30	377	100817 7	1 - 4084	15 - 4098	AU125982, AW953485, AU125447, AU124785, AW001101, BG110603, BF974285, AL040867, AL040866, BF725360, BE868091, BG104583, AW090092, BG121189, AW190132, AI355864, AW889900, BE378250, AL041116, BE548940, BE256037, BF941323, BF034153, BE547709, AU132530, BG106299, AI651097, AI359516, AW080364, AW383973, AL524978, AW362784, AW753817, AI148869, AI393562, AW675581, AA456283, AU149111, AU132763, AU154232, AU149535, AL046765, AU154467, AA400563, AA706610, AW004969, AW836789, AW836786, AA454671, AW373589, AU154038, AI797535, AI367629, AA400150, AA313215, AI018014, AI288449, D53070, AU148577, AA535371, AW836788, BE813630, AW363230, AA029231, AA029232, AW026702, BF887882, AA453842, AA649925, BF887870, AW605323, AA400176, AI094511, AL040652, BE855545, AW937579, AI421670, AI423472, BF753305, AA233312, BF357897, T09488, BE873172, AA683594, AW628747, BF848580, AI371901, R18421, D53589, AA400392, AA586607, AI453237, BF590559, AA227274, D53194, AW999617, D52887, AA514956, D53211, AA233313, AI905503, AA227283, BE070741, AI683301, T23587, T77686, H91031, BF081251, AI916759, AA322214, BE070726, AA453758, C00385, BE694440, BE938121, D53071, D53128, Z25342, BF081249, AI911435, D53754, AI378143, H90918, AI911691, AI272899, H88808, AW754123, AA916908, AI200242, BE070582, AI270551, H89032, AI424142, BF332451, AW580296, AI955188, AW295174, T09487, AW072241, R42483, R38392, BF842266, AA249047, D53193, AW602313, AW857035, D53127, D53210, AW611973, D53588, BF357733, AI910768, BE858745, BF194823, AI905504, AA005312, BF378122, BF820885, AI307564, AI818299, BE814287, BE814349, BF334589, BE814606, BF378140, AW512399, AW364841, BE825640, AW512554, AB002366, AK024705, AK025689, AK027063, and AF052139.
HCOPZ14	378	100817 9	1 - 1070	15 - 1084	AW934723, H37994, AI498824, H92316, AA426342, AA702719, AI128833, AA994942, BF593832, AA932972, AA808375, AA946572, AA369769, AA594909, AA806051, H20466,

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HODEC78	379	1008299	1 - 1457	15 - 1471		AA287686, AA207154, AU154168, AA179206, BF959881, AI640238, AU132680, BF194738, BF940404, AW135518, BE742576, AI192959, AI694946, AI523667, AW204593, AW002521, AI356297, AI361894, AI914362, AI300563, AI952850, AI361750, AI768922, AI582698, AI356535, BE772693, BF061364, BE552169, AW013899, H83373, AA018189, BE276307, AW960051, AA749310, BF433855, AA366409, AA769579, H87151, H87035, AI868789, AA464267, AA249429, AI816088, AA471320, BE256470, AW367751, AW391782, BF931655, AI580257, AA101455, BF961680, BE745650, AA973114, U90028, and U90029.
HODEF29	380	1008304	1 - 413	15 - 427		AW949656, AW949631, AW949643, AW949618, AW949642, AW949655, D80022, D80212, C14389, AW975618, D80166, D81030, D59619, D80210, D80240, AV720211, AW975605, AW966013, AW960454, C14331, D80219, D51423, AV718844, AW966531, AV723927,

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HODFB71	381	1008307	1 - 2721	15 - 2735		AU120186, AV685205, BE745578, AW341085, AI813997, AW075717, BE879613, AW867043, AU128403, AI890853, W95819, AV699386, BE871865, AW207613, BF753636, BE841070, BG153422, AW842415, AI860247, AW009804, AW965308, BE263478, BE350007, AV650178, AW855840, BE645948, BF244293, AW387603, AW387588, AW387570, AW593809, AI813990, AW387594, AI123331, AI814498, BF930287, W95812, AI027130, BG058688, AW297937, BF439051, AW953145, AW581872, AW387567, BE897145, BE894405, AW387565, AA683545, AA514682, AI912084, BE707577, AA284269, BE892060, N25435, AW387551, BF224192, AI801414, AI333144, AW387589, W93061, AI792762, BF897938, AI921027, N39823, AI700761, AI630416, AW613975, AW387543, W52833, BF346511, BF446460, BF433036, AU146326, BF806592, BF436925, AW194002, AA416940, AI539420, AA609176, AI803042, AI688409, N36974, AI095658, AA625154, AA454670, AI015532, AA532391, AI801045, AW304056, AI078810, AW515831, AA313278, AI143830, BF434547, AW073517, AA164477, AW300683, AW387511, AI246195, AI126120, BF194737, AI204238, AI224979, AI363320, AI934406, AI828474, W32859, AW191965, AI452492, AA326596, AW387659, BF887732, AI420557, BE698600, AW512903, AA256049, BF849038, AW806880, AW235154, BE874184, W77847, AI400008, BE841041, BE467240, AI830985, AI819550, AA609278, AV688552, AI340483, BE937015, AA773239, N20374, AA047705, AI273578, AI090700, BF957505, W32413, N39416, AV699803, AI224389, AI439451, AI225075, AI312377, AV706867, AW609073, AI624708, AW444879, AA705899, AA169495, AA235411, AA418233, AU157570, AI076652, AW504319, AI433744, AI159961, BF241608, BE167847, AW841184, AI383240, AI935502, AI435339, D80852, BE047423, AW963146, AA918609, BE843310, AW820003, AV683152, W60585, AI630381, AA662503, AA164478, T33091, BF085221, BE004440, AW366124, BE160282, AI131034, AI675203, AW841228, AW021700, AA626105, AA470040, AI815749, AW581865, AI263359, BF850458, BF591953, AA994256, Z43339, N26670, AA541443, AI475319, AW609556, AI244156, BF849414, N92397, AI267587, W01875, AA886220, W24664, AW237704, AI254748, AA628384, AW020806, AA707127, AV656105, BF924070, W24714, AI040523, AA169701, AW163817, AW576279, BF849416, AI225071, N69026, BF922788, AV686309, AW866508, Z46156, BE768257, BF801569, BE710784, R43868, BF842346, AA854079, AI656170, AA324005, AA229840, T95094, AA324001, BF842366, AA047672, Z39414, BE082315, AI167468, AI300698, AA320833, AA994140, AW382298, N39669, W72123, AI183682, AI678525,

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HODEF78	382	1008314	1 - 538	15 - 552	AW872474, AV723927, AV720211, AW966013, AW966053, D81030, AW975618, AW959597, C15076, AW975621, AW949642, C14389, D80212, D80164, AV719468, D80022, AW978648, AW949656, AV718692, D59502, D59927, AW978634, AW966050, D80195, AW960465, D80045, AW949631, AW949643, AW949618, AW966054, D59467, AV719783, AW966534, AW966065, AV720464, AV718800, D80253, AV718707, D80166, AW966531, AV724520, D80391, AW949654, D80193, AV718844, AW966041, D59619, AW959570, D80210, D80240, AW965185, AW965197, D80043, AW966022, D59275, AW966075, D51060, AV720791, AV719188, AW966029, D59787, D80196, D80227, AW966062, D58283, AW949641, AV699927, D80038, AW959799, AW958992, D80366, AW973334, D59859, AV719822, D80219, AW960553, AW965175, D51423, AV719324, AW959062, AW964477, AW978661, D51799, AW949646, AV718489, AV720203, AV718770, AW973307, AW959202, AV718440, AV720028, AV718633, AW959628, AW965177, AW975605, AW949658, AW973485, AW965184, D80269, AW973541, AV718931, AV719557, AV720731, AW959582, AV699447, C14331, AV722801, AW973474, AV699550, AW964488, AW965163, AW973488, D50979, AW964756, D80188, AV718938, D80024, AW949655, AW960454, AW973482, AW958993, AW959136, AW956434, AW962082, AW949653, D57483, AW965158, AW966043, AW962245, AW965196, AV718530, D50995, AW949630, AW975613, AV723097, AW964737, D59889, AW960473, AA305409, AV720878, AW960564, D80378, D59610, AV720812, AW949629, AW949645, AW949633, AW949632, AW753053, AW949657, AW973330, AW973447, AW956397, AV721386, AW966059, AV700229, AW960532, C14429, AW966023, AV699746, AW959469, AV720150, D80241, AW960570,

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HODEL83	383	1008324	1 - 520	15 - 534	AL138813, and AC004915.
HHPSH76	384	1008325	1 - 1578	15 - 1592	AI971626, BF940710, AI870763, BF447174, BE676274, AI582352, AI431882, AI161166, AI971645, AV693733, BF000296, BF594148, AI222731, AA937784, AI299178, AI394300, AI439546, AI362722, AI345977, AW072003, AW028669, AA632194, AW205947, BF057452, AW206327, AA972757, AA587064, BE712791, N90856, AI350107, AI298077, BF058455, AW134661, AA825270, N90867, AW028686, AW079385, AI147124, AA460705, BE551298, BF736655, AA746018, BF732395, W16558, AW007772, W16555, AI161086, AI149235, AW340546, AW204428, AI161084, AA988853, AI762633, AA904256, BE715859, AI368507, AI025216, AW137922, AA808302, AA808603, BE715826, BE670470, H86812, AA639423, H86876, AI700294, AA887551, BF063604, T55756, BE671028, AA853813, BF115406, AW300426, AA858288, AA878930, BF590909, AA853812, AA639424, BF967749, AC006230,

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HBGBE52	385	100832 6	1 - 769	15 - 783	BE002704, BE065136, AW152446, AV734696, T62861, AA584449, AW370854, AW295305, AI539492, AI093863, T62711, AA663693, AA808792, AW371354, BE138955, AI343194, AI251970, M18740, M25718, and U13369.
HBQAB30	386	100832 7	1 - 779	15 - 793	AU121386, BG024628, AL523997, BF794753, AU137819, BG177391, BG176653, BG259088, BG106999, BG107310, BE265326, BF305474, BF347603, BF796967, BE018909, BE018889, BF797739, BE167696, BF981741, AL039474, BF350360, BE244700, BF869380, AA651690, BF183251, BE778225, BE740869, BE271603, AW474216, D58450, AU124160, AW361236, AW466946, BG107057, BF772633, W27829, AU076945, W26115, BF759430, AW664187, AA570434, BF675704, L12579, M74099, U68542, L43505, AB041595, AC005103, AF047825, AC005086, AF004225, X75013, AC006457, AC002978, and U25750.
HLHCB31	387	100833 2	1 - 2032	15 - 2046	BG250587, AV734294, AW949920, AU125757, BF529108, AW952796, AA443300, BE673024, AI335961, AA738061, AA443433, BE938159, AW513187, AI860346, AW009354, BE294816, AU149357, AW058419, BE042809, BG150358, W40461, N95557, AA418263, AA418366, AI183756, BF983116, N52313, AA620306, AA884462, AI001006, D63258, BE274198, AI400765, N93959, BF886486, AW262034, AW183978, BF765839, AU138365, BE870250, AW183285, N75083, AA377749, AW235381, AI280350, R49967, AI393230, AA249125, BF509213, BF886848, BF887480, AI658872, AI869768, R88859, BF223596, R47440, R47819, BE296217, BF755474, BE707786, AA448501, W24950, AI701222, BF912737, BF757860, H21363, C18194, BF515599, BE168666, N87076, AA339171, D30872, AA091617, AA704660, BF692008, AW138128, A46722, D85510, D86331, E16655, and AF144759.
HPFDV51	388	100833 5	1 - 917	15 - 931	BF508974, AW965115, AI630839, AI741643, AW072035, AW268897, AV723999, D62666, AW072761, AI016072, BF512461, AA344181, C16744, D62943, BF437674, AA344606, AA905880, D62570, AW965114, W60522, F05944, AI915081, AA307598, AV754716, AL042630, AA689351, BF448904, AA429481, AW392414, AI124706, BF883138, AA603400, AW732205, BF769787, AA610381, AL137946, AI471455, AA550959, AW502873, F36200, BF766147, AA132912, AV728369, AI687343, BF742657, H86221, N91711, AI624379, AI282629, AA642809, AV764406, AA828153, AA946848, AA084230, AA578832, T93109, AA228778, AA524800, AI356440, BE868437, AW949694, BG026818, BG026893, C14480, AA508036, AI754037, AA525293, AI568659, AA610826, AI185394, AV743799, AA362349, AI918419, AV734149, AA678950, AA135761, W39287, AU150583, AA654778, T05354, AA385775, AA484892, AA935291, AA468923, BF737749, AA828442, BF853968, AI537800, AI049701, T06828, AW515219, AA666215, AV729669, BE676915, AA483731, AW511778, AA525331, AV764259, AA728861, F26072, AA445951, AW850230, BF913900, AA483034, AW151247, BE143664, AA533054, AW979295, AA371410, N71619, AA483483, AA832016, AA831801, AV762430, AI246996, AA364082, AA598663, AW468349, AA805960,

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HTEDY04	389	100833 6	1 - 1291	15 - 1305		AI927477, BE670723, AI948965, BE466314, AA987287, AI095479, AW957242, AI199425, AI128097, AA448092, AW972332, BF434529, AA447554, BE045361, AI369302, AI361389, AI923806, AA435678, AW972328, AI660309, AI080255, AA054012, N70603, AA837761, AA448073, AW339432, N55490, AA393640, AI863621, W04922, AA447593, N69823, BF361414, N76977, AA057377, AI216708, AA448537, AW243130, AA036760, BE084121, AI675513, AI350467, AW016860, AI265822, H22783, AA508054, R14614, AA383086, BF361412, H80683, T64743, AA379733, AI038561, AA370797, H41174, AA370796, H80646, AA746313, BE791070, BG012707, AI268695, AF006386, and AL034379.
HODEG13	390	100833 7	1 - 516	15 - 530		AA861406, BE160342, AA654837, BF814002, AW877546, AA244041, AW157413, AU143973, BE061421, Z93403, Z92545, AC005326, AC004552, AL360078, AL021406, AL049781, AL136442, AP000515, AL133500, AC006313, AL355272, AL121776, AC005993, AL117340, AL109800, AK021450, AL109853, AC008873, AP001724, AC087085, Z93928, AC016623, AJ229041, AL133514, AC004388, AL049646, AL136981, AL157931, AF036938, AL121997, AL008629, AC007068, Z73986, AC010198, AL353573, AL121950, AC009241, AC004949, AL008639, AC006461, AC005538, AL096867, AC006157, AL354685, AL136133, AL023883, AL033375, AL360157, AC009430, AC005018, AC003670, AC026398, AL160237, AL158141, AL137118, AC006257, AC008127, AC008083, AC008279, AC009308, AL135960, AJ131016, AC007282, AC004554, AL035423, AC004055, AC004911, AL391684, AL035454, AL121841, Z85987, AL158064, AC016607, AC004982, AC020603, AL391666, AL163280, AL391644, AC073572, AC011890, AL359641, AL353582, AL031054, AF002223, AC022274, AL033521, AL132773, AC004052, AC008818, and AC073325.
HHPFK16	391	100834 5	1 - 461	15 - 475		AA306966, AV650072, AV650129, AV651901, AW248211, BE251055, BG257405, BG142261, BF796726, BE252748, BF970072, BE253394, AA587676, AV727695, BE566483, BF979560, N31759, AV689371, BF979663, BF530154, AA379229, AW963917, W32392, BF185241, BE618517, AL523961, BF681293, AV750140, BE748280, AI092258, BE783649, AA281646, BE164637, BE781790, AA523844, AA333474, AL524527, AI733910, H00017, R47258, BE972575, R47244, AA375463, AW304314, AW801668, AL524526, H00071, BF988262, BF683074, BF182646, AA664453, BE842637, BF185407, AI419252, BE388376, AI698340, BE857220, BE673426, AA367629, N80921, AA026486, BE551157, C02600, BE743952, BF694306, AC011477, AC007204, M61870, AC010329, M61866, AC011482, AC008554, AC010636, AF070651, AC008739, U35376, AC024563, AC073539, AF038951, AC003973, M61873, AC078899, AB040906, AC006539, AC008463, AC011494, U37092, AF242519, and U37098.
HARAL81	392	100834 9	1 - 809	15 - 823		AA777763, AI888037, AW954039, AI499427, AI569758, AA573906, AW305026, BF060656, AW778946, BE466396, AW511528, AW069026, AW953867, AW516094, AA526290,

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HFTAU42	393	1008350	1 - 1705	15 - 1719		F11519, F09180, AW275719, T39173, BE146711, AI064864, AL041706, BG059523, AW958945, AI090377, BE146744, AI446464, AW327624, R23873, BF918590, AA456937, AA831426, AW575605, AV755070, AA838140, AI811460, AU152317, AV762050, AA857486, AV760466, AC005004, AL080243, AL096701, AL135798, AC005730, AL353804, AC008733, AC002449, AC012155, AC005288, AP001717, AL021407, AC008928, AC004552, AP000045, AC007279, AL121899, Z83822, AC005324, AC008277, AC012442, AP000113, AP000300, AC010269, AC004890, AC004955, AC010609, AC009311, AC084732, Z85999, AC005065, AL050348, AC004856, AC006345, AC013734, AL121578, AL023283, AL078601, AC007546, Z84719, AP000359, AL136984, AL121886, AC011442, AF207550, AL157384, AC007365, Z84469, AL133453, AL163248, AL158830, U63630, AC006077, AC004762, AL035427, AC010289, AL035681, AC006285, AL157878, AC007850, AP001346, AC009179, AC011479, AL136094, AL034379, AC004987, AL357519, AL121905, AP000556, AL031228, AC022078, AC007956, AL049795, AC005102, AC002395, AL353701, AC016025, AC005081, AL034429, Z68226, AL138836, AL133163, AC008134, AP000255, AL022476, AC004963, Z69705, AK024182, AL450224, AC073148, AC009116, AL109804, AC007679, AP001670, AP000555, AL133174, AC004754, AL121928, AC023490, AC025593, AC007845, AL450226, AP000557, AJ400877, AC008102, AF165926, AC006141, AP000135, AC005539, AP000031, AP001666, AF134726, AL137039, AC005037, AL021391, AC018719, AL136980, AC007954, AC004859, AC020906, AL049758, AC008770, AC058791, AC006120, AC073898, AC006064, AC006483, AF001552, AP000502, AC006561, AL136300, AF045555, AP001712, AL035249, AC005522, AJ295844, AC006994, AC007686, AC006273, AC006557, AC005599, AP000105, AP001714, AC003663, and AC005971.
HETDA81	394	1008358	1 - 363	15 - 377		AA164850, AI347829, AA164851, AI539038, W87820, T91042, AW103512, AI208103, AI538025, AW959576, BF513984, AI886882, AI827139, AW571976, BE565889, AI557283, AI565180, AI673742, AA827331, AA164745, AW665930, AI862333, BE971469, T83877, AI590154, AW966053, AW975618, AW959628, AW966531, AW978634, AW966534, C14331,

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HODEI92	395	100835 9	1 - 1064	15 - 1078	AW970780, AA292507, AA131133, AW009250, W93698, AA443637, BE326280, AA815396, AA524536, AI131316, AA716422, AW167811, AI989794, AI204695, AI206303, AA235322, AW102822, AA195671, AW104260, AI686439, W93749, AA131081, AA195672, AW367192, AI254818, AW352181, AI611923, AW367188, H48933, AX016191, AX016189, AF088074, AF190501, and AX016183.
HODEB58	396	100837 2	1 - 459	15 - 473	AL157628, AU123801, AW502001, AA247157, AW996782, AW996780, and D86985.
HODEG86	397	100837 9	1 - 634	15 - 648	AC008750.
HODFA57	398	100839 6	1 - 627	15 - 641	AL034561.
HODFB31	399	100840 1	1 - 606	15 - 620	BG036348, AV688303, BF243944, AU125772, BF967928, AL355112, and AK022722.
HTEMP79	400	100840 6	1 - 1003	15 - 1017	BF979841, BF979305, BF979296, BG150564, AI341338, AA910069, BE503224, AA910067, AW340554, AA868285, AA861100, AA917718, AA129040, AL038500, AI221381, AU137865, AU120146, AU125654, AU131460, AU135444, AU120558, AU131110, AU139759, AU138029, AU139592, BE893418, AV714298, AW239516, AV713810, AU135947, AV715665, AU129590, AU138204, AL038186, AU134855, AU134811, AU117756, AU139562, AU134643, AA205818, AU139871, BG168497, AU129389, AI239750, BE613687, BE396928, BF967070, BE618106, AU136621, AA912915, AU126929, BE890856, AU135184, BE907987, AU127952, Z99424, AU134720, AA206189, AW996933, AU136524, AV724976, AW842650, AW842596, AV715554, BE892925, AA205550, AW842656, BF966532, AU119441, AV721305, AU118998, AW842593, AU118558, AW842553, BG152681, BE542111, BF701180, BF671574, AW451940, AI149958, BF512132, AW590832, BE781825, BE568730, AW590222, AU136337, BF574935, BF575983, BF969659, BF572912, AA315719, AA224536, BF671221, BF507657, BF244704, BF222463, AU136454, BE566974, AW390941, AA333736, BF976004, AI637727, BE839049, AI628722, AW385599, AI205669, AA232305, BE504056, AA224264, AI969344, AW842657, AI651532, BF130108, BF673027, AA401546, BE620495, AW952726, BE894917, BE782983, AA769771, BE622263, AA102022, BE812973, AA605007, BF923140, BE177709, Y08713, AV652507, BE243891, AA317641, BG251796, R86883, W40563, AL038869, Y08710, BE177607, BG027535, AA911682, AA400010, T31615, AW860317, BF512166, AW628844, AA215844, AA609369, AA327908, AI205700,

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HODEI59	401	1008423	1 - 2194	15 - 2208	AL514246, AL515386, AL518272, AL514286, AL534645, AL513954, AL514758, AL515951, AL517608, AL537938, AL534937, AL535126, AL514245, AL514285, AL515385, BE741801, AL518271, BG030448, BE249894, BE747098, BF969850, BE903771, AI089532, BE732303, AL516353, AU124756, AL515950, BE875530, BE548631, AL135215, BE559611, BE746448, BE617545, BF980387, BG105192, BF304043, BF344655, BG028220, BE876125, BE385482, BE546433, BE613787, BE745667, BF306846, BE872421, BE304378, AI858032, BE910151, BE728945, BG031083, BE044327, BE312769, BF304470, BF220067, BE382790, BF792220, BE888395, BE512863, AW630049, BE264704, BE019419, AW190978, BE873528, BE743867, BF980238, BE272405, BG177540, BF979600, AL517607, AL516352, BF312830, AI133631, AI813951, BE880945, BE909280, BF204948, BF306768, BF037878, BE908725, BE305052, BF309305, BE314389, BE260228, BE740349, BE617021, AI609415, BE019955, BE742883, BE788962, AW630031, BE900814, BE744415, BG037108, BE872160, AI799266, BE872542, BF206684, BF345364, AU137689, BE870455, AU133915, BE075645, BE745513, BE392394, BE276403, BE259523, BE869272, BE281377, AI560720, BE907015, BF475580, AW411260, BE778336, BE904319, AI221781, BG024432, BE514586, AW664141, AW409870, BE512937, AI421824, BE746684, BE268722, BE898529, BE747682, BE295364, BE294227, BE296880, BE743160, BF968080, BE875729, AI803308, AW193912, AA873179, BF219991, AW572599, BE315180, BF036325, AW409625, BF969157, AA442385, AW593276, BE278388, BF681228, BE620528, AI160090, AA129184, AA641152, AI497645, AA074819, AW265036, AA918330, AA514744, AA937320, AA833843, AW076094, BE439500, AA437304, AW338396, BE314832, BE542221, AA559119, AI081179, AA182029, AI339464, BE736401, BE298973, BF690165, AW104555, AA633022, BE167603, AA846480, AI080502, N58404, AU148552, AA977779, AA601895, AA602350, BE206010, AI283493, AA719486, AA777186, BF679880, BE075214, AW971216, AI093386, AA635024, AA878958, AW581739, AU155076, BE872745, BF689939, AI372885, AI150205, AA987809, AU157269, BF736549, AA640960, AI696971, AV699083, BE272492, BE075208, AI188096, AA069710, BE878885, AA598686, BE293486, AA991856, AA922879, AA059332, AW170079, AV711790, AW022112, AW838593, AA631450, AW001861, BF923732, AA553895, AA312746, AI359100, AA523525, BE620924, AA019781, AI024621, BE293768, AI016430, AA019940, AL513953, BF893485, AA808711, AW769946, AI671904, BF924319, AA700509, AA494181, AI986194, AA206093, BF511145,

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HODEF94	402	1008429	1 - 598	15 - 612	AA361736, D81026, AW960465, AW966053, AW975618, D80043, AV719783, AV720464, AW973307, AW966531, AW973490, AV719468, AV718800, AW965163, AW959202, AW966041, AW966054, AA305578, C14389, AW949632, AW959570, AW964532, AW959597, AW966022, AW965175, AV718692, AW966534, AW966050, AW966029, AW973445, AW966062, AW966013, AW973488, D80164, D59275, AW973474, D80195, AW975621, AW978648, AW949629, AW965177, D59467, AW978634, AV720791, AV719188, AV724520, D80227, AW966059, D59502, AW949654, AV699927, AW965185, AW965197, D58283, AW962395, AW966075, AW966065, AV719822, AW959799, AW959062, AW964477, AW949641, AW973334, AW973541, D51022, D50979, AW966043, D59859, D80022, C14331, D80166, AV720150, AW965158, AV699550, AW960473, AW975613, D51423, D59619, AV718707, AW978661, D80210, D51799, D80391, AV719557, AW960553, D80240, AW973482, D80253, AW966030, C15076, AV718489, AV720203, AW958992, AW964756, D59787, AW959136, AW962082, AV719324, AV718440, AV718938, AV720028, AV718633, AW959628, AW975605, AW965196, AW973485, AW965184, AW966400, AV720211, AV718931, AV720878, AV718844, AV718770, AV720731, D81030,

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HPFCZ53	403	1008445	1 - 2506	15 - 2520	BE744855, AV733083, AL135501, AW269295, BF447642, AI742093, AI570166, BF432844, AI682417, AI831002, BE221094, AA454871, BE895906, AA489494, W03448, AA458761, AI223848, AI091463, BE010197, AW974159, R75972, BE896483, H12380, BF343007, N27687, N25761, H98964, BF995992, BE930205, R80411, R76804, R80520, H00651, H13488, N20850, R71483, R33738, N92681, H01818, R70736, H12329, AW026563, H27255, AA457496, R78747, R71159, C16910, H87189, AA079248, H00740, R70737, R33865,

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HWACN71	404	1008764	1 - 2527	15 - 2541	BF432374, AI363168, AI871467, AW452231, AI688606, AI572267, AW858522, AL134110, AW601637, AL134524, AW577199, AW577201, AL045327, AW971725, AW972287, AW972285, AW971301, AW979127, AW979212, AW979310, AW975246, AW971300, AW979124, AW974123, AW971066, AW970052, AW976032, AW971235, AW975679, AW975999, AW971271, AW974909, AW973753, AW975685, AW974378, AW976043, AW972642, AW972849, AW972907, AW979149, AW974825, AW975991, AW976506, AW971100, AW975095, AW972665, AW970089, AW974801, AW975692, AW970912, AW970973, AW975149, AW974964, AW968185, AW972649, AW972675, AW972691, AW972897, AW974390, AW975667, AW974363, AW974376, AW974678, AW975657, AW975104, AW971265, AW970554, AW974346, AW974933, AW979205, AW971330, AW973776, AW979184, AW970908, AW969928, AW972650, AW973247, AW970976, AW970856, AW972772, AW973722, AW976023, AW972919, AW971173, AW971088, AW975628, AW972594, AW974092, AW975373, AW971737, AW969966, AW973397, AW972396, AW975061, AW971732, AW970941, AW972926, AW974932, AW971356, AW970918, AW979208, AW979306, AW979235, AW969851, AW970987, AW974098, AW969986, AW858525, AW979055, AW972716, AW972427, AW972686, AW969723, AW979122, AW970084, AW970053, AW969816, AW979115, AW975921, AW972812, AW974883, AW975049, AW970928, AW979289, AW971983, AW861944, AW979020, AW969974, AW971156, AW979087, AW971411, AW971243, AW969733, AW975971, AW975156, AW972273, AW979125, AW974658, AW974800, AW972871, AW972927, AW973774, AW972596, AW970857, AW972296, AW979211, AW974686, AW974645, AW979285, AW974913, AW969716, AW979190, AW972721, AW971291, AW974088, AW975411, AW972654, AW976031, AW970586, AW975981, AW975235, AW979059, AW973170, AW971403, AW972701, AW975150, AW971017, AW970853, AW973950, AW979191, AW971168, AW972879, AW975050, AW971187, AW972936, AW979002, AW979238, AW974086, AW970915, AW969748, AW974393, AW975037, AW979253, AW972863, AW979308, AW975383, AW974897, AW975264, AW979158, AL045328, AW969771, AW974077, AW968200, AW972225, AW971160, AW972274, AW975019,

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HOFMU69	405	1009017	1 - 1428	15 - 1442	AV684729, AW028063, BF966613, BF183036, BF513083, BE856253, AV725683, BF967767, BF476032, AA037314, AW025205, AW118083, AV654724, AI553845, BF739803, BE874632, AV721664, BG032797, BE835358, BF107095, BE835421, AI936938, AW629496, BF112039, AI627928, BG036935, AI283403, BF978144, BF240167, AW469390, AI805469, AI027476, AA926654, AI818906, BF977973, AI421269, AI291304, BF081332, AW074838, N57371, AW001973, BF515401, BF370065, AA970745, AA102090, AA463457, AA923662, AI309195, AA568740, AA972072, AI276170, AI718178, BG058506, AI384119, AW182398, AI002643, AI277271, AA937950, AA905140, AI290395, AI304767, AA731671, AA934048, AA311659, AA610079, AA907546, AI694431, AA854770, AA905147, AA056233, AA804207, T87107, N31503, AI358287, AA055922, AI221597, AI041581, AI204193, AI806731, AI554900, AI268390, AV654948, D62387, AA099343, AA258407, AI809900, AA988126, AA872540, AA890504, C15485, AL119457, AL119399, D62335, AL042382, AL042544, AL079794, AW877209, BG164558, AL079741, BF925729, BG168696, AL119511, BG032704, AV681630, AV682252, AI627988, BG166654, AW149925, AW983783, BF970449, AW161156, BF814527, AI269862, AI537677, AI340603, AV734329, AL119863, BG029667, BF970990, AI796743, AI536685, AL514129, BE964614, AL037081, AW983829, BE047852, BG260287, AW051258, AV753074, BF814420, AW029611, AI564719, AI500061, AI537244, AI677796, AL040241, BE885353, AI698391, AL514879, AL120853, AW169671, AW051088, AI475371, AI926790, AI591420, AI889376, AI932794, AW983703, AI524671, BG260037, AW983691, AI611738, AI619502, AI632408, AI802542, AI889189, AI288305, AW118518, AI270183, AI570807, AI635492, AW026882, AI635067, AW050522, AI923370, AI281772, BF812960, BF812938, BF970652, AI921248, AV650703, BF827575, AI620089, AA449768, AI433157, AI702073, AI933589, BF812961, BG109270, BF107577, AI478123, AL037104, AI633125, AI915291, BG031815, AI582932, AV757737, AI890833, AI468872, AI521560, W74529, AL037454, BE045182, BF885081, BF904265, BG179993, BG257535, BF970768, AI917252, BG110517, BF987104, BG168646, AI797908, AI521012, AW117746, AV743962, AI274508,

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HSKNP59	406	100909 5	1 - 960	15 - 974	BE799721, AA480375, BE719132, BE719128, BF841831, AI251419, AI270846, AI308612, AI270979, AA953100, AI340555, AI250202, BE041953, AI309146, BE043759, BE043282, AV706824, AW023232, AW020543, AV702772, AV701946, AV726010, AV696790, AV702021, AV726088, AV728872, AV727510, AW960655, AV709232, AV726026, AV705981, AV709101, AV702790, AW963750, AV705433, AV702728, AV705873,

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HETBR71	407	100934 3	1 - 1221	15 - 1235	AW006970, BE879571, AW024469, AV721459, BE540489, BE536564, BF965299, BE881422, BF664939, BE542653, BF516238, BF681569, AA526371, AA526589, AA526389, BF106316, AI799491, AI498256, AI097048, AA708799, AA043221, AI738993, AW161297, AA451969, AI004196, AA530865, AI355638, AI215599, AA043222, BF446574, AI536604, N50826, AA452260, AA833821, AI695010, AW157800, AA526474, N48253, AI889875, AW263944, AA040895, AA478480, AV682170, AI569738, AI269131, AA993786, BE817977, AA042971,

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HE2ES17	408	100934 9	1 - 1483	15 - 1497		BG111492, AW439786, AW073883, AV719548, AV706176, BF132037, AU143895, BF671635, AU152574, AI925143, AI018024, AA460521, AU152977, BF593938, AI277889, N35236, AI911015, AV720311, AV720287, AV720565, AV719404, H99645, AA983864, AI539561, AA781828, AI140736, AW474242, AI539533, AI084377, AI367955, N44901, AA860474, AW510585, AI051782, T80249, AI276390, AA460520, AU116935, AA682234, N66333, N66141, AA214431, N98663, BE244676, R38792, AK000874, AF078932, Y10495, Y10496, AF203441, AF203437, and AC007546.
HELHM06	409	100936 2	1 - 336	15 - 350		AW327723, AW674864, AL516842, BE882980, AL532515, BE799552, BE896851, BF984921, BE396422, BF826008, BE799625, BF826769, BF218169, AU077063, AV687313, L14076, and AC004236.
HE2AG50	410	100936 5	1 - 1794	15 - 1808		AI453045, AL528826, AA856613, AI912949, AI739056, BF966732, AI986110, AL519448, AW613375, AI379787, BG032945, AW962214, AI914227, AA582587, BF590115, BF514600, BF680870, AI587526, AI867178, AA505399, AA683551, BF431318, AI078274, AI928459, AU144502, AA766846, AA815041, AI281397, BG170712, AA232560, AW051473, AA523261, BF576501, BF108639, BE242521, AW951858, AI354235, AL039035, BF572328, AI301459, AA126940, AA326462, N70794, AI281454, AA651932, BF574933, AI826813, AA278487, AI349091, AA197245, BF672052, AI700825, BF694355, BF668070, BE247045, BF673072, H43036, AV659423, BF671763, W67786, AI370310, AW631375, W67845, BF966298, AL047459, BF574129, F03536, AI301406, AI630671, BF693378, AA367445, T28398, BG057778, BF790818, BF574845, BF571244, AI525002, AI825974, BE174789, Z20344, BF575895, C15076, D80522, D59467, D59787, D80164, AV701004, AW975618, AV699866, AI569419, AW964532, C14331, AV718530, D81030, D59627, AV738340, D80366, D80258, AV700159, AW966330, AW753053, D81026, AW973541, AV699550, AV718489, AW377671, AW964468, D80064, AI557751, AV718692, AV718681, D50979, AW973445, AW966029, AW959628, AW958993, AV724520, AV701422, AV720035, D80043, AW959799, D80133, AW960465, AW960553, D80248, AV720878, AW966531, AW978634, AV741191, AW966053, AW973334, AW958992, AW965163, AV720533, AV719783, C14389, AV720464, AW966059, AV720791, AV718440, AV720028, D58283, AW966022, AW966041, D59927, D59859, AW949632, D80022, AW973485, D59275, AW949641, AW965177, D59502, D80391, AW965158, D80253, AW966030, AW964756, AW966043, AV742996, AW960473, AW959469, D80132, AW965196, AW965184, AW966534, AW966075, AV718844, AW966065, AW973482, AW966054, AW975621, AW962082, D51423, AV719822, D80196,

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HE2ES61	411	100938 8	1 - 1258	15 - 1272	AF075305, AW439817, AW439844, AI493164, AA203275, BF690753, AA533476, N31463, AI435348, AA838687, AI334356, AI282866, AI823812, AV719236, AA507026, AW138875, AW236781, AW996877, BF445452, BE673101, AA035519, AW118716, AA219612, AW194890, AA737528, AA453621, AC005034, and AB026911.
HE2SO43	412	100939 8	1 - 1107	15 - 1121	BF345442, BE745400, BF002361, BF591185, AW006311, AI740645, AW972577, AW190738, AW872945, BF590839, AW515791, AI337338, AI623327, AI160758, BG055059, AI146399, AI955183, AW130008, AI380399, AI375011, BG222460, AI539558, AI217110, AI371688, AW615545, AI360696, AW004738, AA885332, AA506508, AI264485, AI356161, AA280731, AW873997, AI479723, AI471972, AI077764, AI356162, AI472175, AA557465, AW007779, BE463808, H29892, AI240814, AI521518, AI356160, BE827863, BF215793, AI419525, AW248081, T23536, AI424657, H17888, BF434314, AA877639, R96881, BF000404, AI934283, BF510867, BF588477, R96880, H19299, T88997, R72799, AI370746, BF806860, D45762, AC006547, AC000083, AC000097, AK025106, X56044, AC003060, and AC012526.
HLHCI07	413	100940 3	1 - 517	15 - 531	W31456, W52407, AC005410, AC020744, AL445249, AL132821, AL035652, and AC016925.
HTTBR65	414	100941	1 - 461	15 - 475	BE314959, AW411287, AW411286, BF304101, BF976822, AW411455, BF344411, BF339991,

		4			BF571534, AW367868, BF809505, W93139, AA010506, AF095890, D12765, E06025, U35622, U18018, and E06024.
HPFCV71	415	100945 3	1 - 661	15 - 675	AW028647, R31337, BF892076, BF892569, AW816131, BF988799, BF993589, BF990226, AA224815, BF773356, AV732057, BF992718, AV730440, AA565911, BE464585, AW301855, AI281622, AA523719, R68706, AA640823, AW023376, R31595, AW835334, AA728954, BF992721, AA362440, BF992720, AA640563, AU147781, AA935827, AI318304, H16875, AW968193, AW850985, AW162314, BF821112, AW162332, BF849123, BE974024, AI268491, BF917144, AA985194, AW407007, AI909640, AA833828, AW953071, BG255923, AI625175, AW572713, AI345146, T47429, AA015948, AA112864, AU146575, BE880448, AW080772, AW157173, AA878955, AW973825, BE246411, BG260565, AA932787, AL537432, BE706737, AL537956, AV720475, F23268, BE312650, AW962187, AA984920, AF178081, AC006077, AC010519, AC007619, AC005730, AF023268, AC008745, AC003693, AC016027, AC004797, AC016830, AL163279, AP000031, AF121781, L78810, AC008635, U89336, AL080243, AL022315, AJ006345, AC034186, AC010091, AC022404, AC026161, AC004973, AC083863, AC005484, AC005049, AL021807, AC005519, AC005759, AL031848, AC007899, AL162424, AC022150, AC006006, Z83844, AL162505, Z97056, AP001714, AL031281, AC010463, AC005057, Z49155, AP001629, AL121928, AC005763, AL133458, AP000556, AL136137, AP000552, AC000353, AC010422, AC023490, AC005668, AC006345, AL136179, AC004448, AC009194, AC005412, AL031588, AJ009615, U85195, AL078460, AL135787, AE000658, AC005822, AL139342, AL035071, AL008582, AC005058, AL122001, AC018644, AL009179, AC007384, AC004634, AL031767, Z93015, AL049838, AC019210, AC011475, AP001748, AC005288, Z98036, AP000558, AL109797, Z84477, AL121653, AL049872, AF205592, AC000134, AC019183, AC073898, AC006057, AC005620, AC010311, AL035658, AL133240, AC008276, AC011480, AP000557, AC006285, AC005231, AL033378, AC005066, AC010458, AC011811, AC022148, AC005516, AC005844, AL022165, AL109935, AL353748, AL117258, AC005940, AL133353, AL391259, AC010527, AC004254, AF205588, AL158040, AF146367, AP000131, AP000209, AP000248, Z99716, AL035417, AC004087, AC004552, AC008733, AC010618, AC007969, AC011493, AC007386, AL023575, AF088219, AC005911, AL136120, AC004234, AC005043, AC004890, AC026776, AC005829, AC006337, AL117381, AF134726, AC004638, AL133227, AC011465, AC007956, AC007226, AC011500, AL035495, AC018751, AC009516, AC005913, AL022238, Z74739, AF165142, AC008543, AC006023, AJ277546, AC004024, AL031228, AL135844, AL161672, AC002107, AP000228, AP000140, AC005052, AP000088, AP001694, AL033529, AF111169, AL136418, AC012309, AL121586, AC004915, AL079342, AL136172, Y18000, AP000703, AC004991, AF196969, AC005695, AL138960, and AL122014.
HCABR46	416	100947 9	1 - 869	15 - 883	AW131143, BF343353, AW166982, AI922723, AA769108, AW084960, AI076939, AW189314, AI971285, AW190185, AV701548, AW103994, AI885578, AW167989, AI859425,

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HCRCB80	417	100948 2	1 - 1000	15 - 1014	BE270790, BE383962, BE260603, BE727942, AV714102, AI905945, BE260907, BE728699, BG118937, AU140029, BF663274, BE730560, AV715039, BF306742, BE872592, BE884864, BG119519, BG254547, BG033397, BE897234, BE906383, BF213989, BE890780, BE886666, BE729068, BF664061, BE893840, BE252245, BF669215, BF528849, BE905149, BE891512, BG104225, BF207769, BE728783, BG248372, BE388079, BF038595, BE748126, BE870266, BF130113, BF792932, BE894590, BE892383, BE384387, BE743362, BE564177, BE891634, BE733011, BE547370, AV717679, BF102513, BG255970, BE266671, BF026737, BE259976, BE385310, BF026593, BE386351, BE407399, BE277240, BE727813, BE385159, BE409533, AW732973, BE386494, BE274479, BF026137, BE386183, BE296137, BE745173, AV714054, BE730829, BG104294, BE777522, BG104459, AA428176, BG036685, BE222997, AV714339, AI557263, AA700878, AI743584, BE262578, AI743198, BF685382, AI066524, AI188543, BF683073, AV708703, AI589860, AV702432, BE728260, AA868378, AV737768, AI743131, BF675084, AW007795, BG164621, AW025357, BF114637, AW025366, AW085493, BF245736, BE677843, AI497772, AA868669, AV762308, AA947862, AI191406, AW131703, BE613563, BE388033, BE385788, BE730013, BF055482, BF125638, AA885890, AI215751, BE277311, BE390926, BE280636, AA903664, AI241112, BE336882, BE743276, BE270857, BE408649, W58599, AV727089, BE277287, AA775621, AV712159, AA863101, AV764193, AW327735, BE410530, AI041656, AW157690, BF528185, AI123876, AI352438, AI933151, BE409317, BE262204, AI141088, AI346690, AA009600, BE728126, AI918159, AI087107, AA399235, AI039380, AI494377, AI983614, AL037677, BE736251, AI928560, AI376910, AA307765, AA398088, AI422735, AA757153, BG029167, AA864729, AI378110, AI141147, AA621304, AI472125, BE270990, AA745843, BF132284, AW014199, AA398171, AA747250, AI923809, AI491752, AA824365, BF240874, AA526902, AI014763, AI187061, AI262609, AI131312, AI240782, BG054713, AI310956, AI922166, AA860807, BF972839, AI567441, AA576277, BE392978, AA779522, AW005219, AV756988, AA069652, N92488, BE206811, AA206878, AA114853, AI311910, AI913768, BE271114, AI597888, AA099366, AI185009, AI566146, AW161259, W58598, AI479415, BF684876, AA425147, AA114854, AW966966, AA535597, AA465204, AA457720, BE439813, AA101916, AV752801, AA143170, BG251537, AI741464, AA033922, N81048, AA428702, AI866745, AA179183, BF183167, AA399606, AW732971, AA554347, AA480829, AI041051, AA430631, N28986, N70589, AA706843, R72750, AA150902, AA526082, W23545, AA351710, AA354718, AV740958, AI620955, AI129065, AA716689, R72749, AR052511, D50420, Z83840, AF155235, AF091076, AR052510, AF109906, U95114, L34071, AJ236665, T64803, R05937, R21834, R32145, R32146, R33254, R50537, R55048, H16667, H26603, H77860, H87453, H87615, N42446, W01082, W02722, W86331, AA005253, AA025417, AA029591, AA031801,

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HPMLW78	418	1009833	1 - 637	15 - 651		AL538180, H47744, BG105704, T28491, BE787797, AA422141, AA127841, BF088491, AA401304, BE707805, AW368612, AW024390, BE063214, AW949504, BE085870, AU119798, AA091414, BE063168, M31170, M86546, M31522, I96217, AF020196, L27453, AF020197, AB043619, AB043620, AJ245963, AJ245962, AJ245966, AF162696, AF313399, AF313401, AF313400, AF313398, and S82001.
HODJK75	419	1009842	1 - 626	15 - 640		
HODJX27	420	1009854	1 - 109	15 - 123		AV738340, AV744657, AV744012, AV742732, AV742050, T48593, T26395, AV681505, AV681504, AA585439, AV699103, AV681474, AV681526, AV681486, AV681464, AW955883, AW955403, AW955893, T03269, AV681472, AW963289, AW953750, AV701136, AV701254, AV701435, AA585278, AV701198, AW960162, AW959372, AW955886, AW949707, AW956977, AV701467, AA283312, AV701189, AW960161, AV701301, AV746179, AW949665, AW949667, AV681477, AV681495, AV701472, AV701436, AV701388, AV701297, AW963961, AV699218, AV699144, AV699170, AV699269, AV699229, AV662317, AV742757, AV742025, AV699136, AV662287, AV699123, AV699224, AV662272, AV699125, AV699203, AV699219, AV699131, AV699182, AV699246, AV662247, AV699153, AV699200, AV662257, AA585378, AV742899, AV699250, AV753956, AV662248, AV699247, AV699199, AV699137, AV662242, AV699223, AV699147, AW962627, AV662225, AV701276, AV701320, AV701173, AV701283, AV701471, AV701384, AV662191, AV701449, AV701071, AV701372, AV701088, AV701237, AV701027, AV681462, AV662235, AV701403, AV662218, AV701410, AA585389, AI526112, AV745415, AA585116, D51250, AA585325, AA585329, AV662288, AV699204, AV662268, AV701034, AV701132, AV662223, AV662149, AV701468, AV701030, AV681528, AW962603, AV742733, AV701311, AV699098, AV744949, AV681514, AV681512, AV699156, AV699139, AW951170, AW951316, AV699196, AW962629, AV739506, AV701223, AV699175, AV662289, AA585430, AV743048, AV699197, AV645339, AV701059, AV758536, AV740765, AV681506, AI525306, AV698330, AV692714, AV699129, AV662207, AV699167, AV699119, AV739001, AV662196, AV740192, AV758756, AV662302, AV681525, AV735331, AV701451, AV745948, AV662319, AV746382, AV746276, AV701390, AV681487, AV681523, AV701201, AV753656, AW952650, AV735489, AA585327, AR070327, A94995, AX020191, AR031365, AX020190, AR038669, A30438, AF135243, AB005666, A85395, A85476,

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HODJV85	421	100985 7	1 - 628	15 - 642	W63650, AC004975, AR077702, A82595, AR060385, AB002449, AR070327, I14842, AR087649, A84916, AX027925, AB028859, I79511, AJ132110, A62300, A62298, AR054175, AR008277, AR008281, AX033851, AR018138, AR008278, AF058696, and AR016808.
HOOJO38	422	100991 8	1 - 704	15 - 718	AL531631, AI983085, AL527211, AL526194, AI923500, AI819615, BE901824, AI635186, BG122272, BE728419, BG260421, BG109146, BG024689, BE796594, BE738377, BE731685, BG109875, AW516253, BE794629, BF025942, BE391594, AL528184, BE727443, BE736477, BF795001, BF026707, BG028283, BF794434, BG255190, AI590711, BE562472, AL531630, AL518218, BG104271, BF965976, BE274333, AV762986, BE729263, BF984059, AW473190, BF338886, AA737352, BE251289, AV655988, BE871215, BE385375, AU123120, BE537431, BF795361, BE563141, BG179543, BE389545, BE279135, AW102952, AI992206, BE274788, AI564728, AA804870, BF663213, BE294212, BE389212, BE277137, AI890776, BF794711, BE894574, BE409929, AV752081, BE793519, BE280595, BE263958, BG165237, BF663378, AV758987, AI890733, BE410686, BE253511, AI458832, BE900482, BE279951, BE782108, BG116106, BF685318, BE385945, BE409462, BF684482, AI589325, BE900553, BF025688, BG104183, BF965657, AI445978, BE261172, BF975083, AI951212, BG024839, AW780427, BF971859, BG028059, BG253625, AV761980, AI683852, BF663906, BE388565, AI434960, AI499080, BE391963, BF683866, BE407371, BE313286, AI683168, BG033353, BE269180, BE260812, AW571765, BF568157, BE273792, AI432555, BE729573, BF679984, AI689491, AL526345, AW410284, BE391998, AV763312, AW269852, AW149044, BF663343, AI871089, BF183135, BE273288, AV682486, AW130195, AL518217, BE275734, AW239186, BE384226, BG165891, BE898135, BE907411, BE265210, AW440291, BE313877, BE280533, BE260744, BE902943, BE544441, BE251633, BF131800, BF568884, AW104857, BE898978, BE206852, BG260357, BE391257, AW583713, BE397380, AW613264, BE614507, BE280528, AW247198, BG027893, BE786936, BF697381, BF124948, AW327828, BE742851, BE740337, BF664259, BF038698, BE895951, BE390445, BF700485, AA131182, AI635179, AW087993,

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HSDZM65	425	1010299	1 - 1348	15 - 1362	AI344321, AW194980, AW162622, AW161811, BE695903, AW960568, BF589126, AI701104, AU154426, BE045555, BF033598, AW853100, BF971574, BF814791, AI970794, AI934386,

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HPDOC39	426	1010400	1 - 1107	15 - 1121		AL518597, AL521465, AL521860, AU142321, AL519163, BE791154, AV710439, AU137468, BG108541, BE875817, BE908178, BE794167, BE616810, BE797530, BG177616, BF791974, BE563172, BF203748, BG122611, BF983927, AU138928, BF304118, AU136676, BG256808, BG166547, BE908232, BE900747, BF981499, BE259007, BF984319, BF982660, BF203883, BE889058, BG121889, BE409876, BG028149, BE886412, AU135659, BE409111, BE777856, BE396964, BE891193, BE737086, BG252022, AW608289, BG115304, BF303724, BE888387, AW392529, BE562432, BE258634, BE889878, BE269473, AI174700, BF794665, AU134289, BG254012, BE254220, BE252060, BF215570, BF691292, BE295498, BE297846, BE409000, BE259383, BE259293, BG106782, BE780774, BF792473, BE539784, BE269036, BF699793, BE936340, AW978187, BF984873, BE089821, AW392532, BE409484, BE884858, BE872222, BF983743, BF983915, AL044183, BE268220, N28894, BF087516, AA488136, BF800736, BF027913, AA143588, AU139273, AI815968, AW405832, BF674380, H11682, N42210, BF336934, W31775, N56608, N40261, BF810364, BG171478, AA805505, AA101513, AA101590, BF203625, AA085473, AI080684, AA338102, H85230, AW235051, AA552394, AA354823, BE645922, AI375591, AA356478, AA189014, AW392524, AA425206, BF083740, BE782032, H73591, AA159876, BG164729, H73817, AA373687, AA912092, BE083129, BF894997, AA356309, AW892368, AW582387, BF758870, R84501, D60569, W25687, T24902, H49162, AI565353, AW835598, T89376, BG011455, AI128815, BE698610, AA813807, AW582390, AA295075, W04674, N29653, BG117269, AA975223, AW381345, R58308, AL521859, AI445105, BE999943, R85283, AL521464, AL519162, BE813178, T80058, AW837148, AF130113, AB009282, AR052337, AC009032, Y12517, and X96392.

HE2PS15	427	101052 5	1 - 600	15 - 614	BF244650, AW961558, AW248089, AW967334, BG029757, AV701568, BF219959, BF694529, BE791161, BF037860, BF696944, BF678089, AI186311, BF220033, BF219215, AI148765, AI582766, AI806566, AI209154, AII44495, AW305249, AI189759, AI478931, AA569869, BF965022, N30742, AA569868, AI491886, AI038347, AV739006, AI807215, BE391925, AL046958, BE858225, AI936891, AV742884, AW169997, AA742511, AI251732, AV715771, AV717459, BF668463, AI363204, AI057284, AL046957, AW182041, AI827188, AA115690, AA651663, AA978142, W30854, W15644, AA707791, N94563, AW249748, AA654862, N80826, AV764171, AI005595, BE896961, T90621, W31005, AA284212, BF965077, AV711844, AV734517, AA531530, AI132988, AW592487, AV733754, AV727768, BE565651, BG231096, BF245459, AV717832, AV745224, AV744752, AI190937, BE280227, F30153, AA953551, D53844, AV715232, BF216076, H91807, AA134308, N41841, BF244274, AA983553, AA134316, AA134315, AV746231, BE866551, F28648, H87571, AA468556, AA974508, AI066796, AI305827, AA554533, AA308101, AA654533, AW470941, AA548236, AA884280, AI244424, AA903485, AW023614, AA557186, AA864769, AA283903, AA650169, AA081589, AW183938, BE892296, BF679200, F36175, AA084667, AW275122, AI302453, AV739848, BE843421, AV741558, AA746065, F27405, AA907836, AA305437, AA852663, H92083, AA654036, T84144, BF247506, AA279759, T89384, BF209126, AA552449, AA906338, AA972090, AA133509, AA730939, AA626444, N56092, AA865834, AA215865, BG230951, H91708, AA134307, AI420622, AA937615, AW975237, AI040250, AA664941, AV746261, N98724, AV746266, F36194, T24920, AA369378, AW105551, AA506732, T83147, AV754243, N56408, F30237, H03246, AA341970, F18332, AA330234, AA635717, AA836574, AW189710, W30743, AI264957, BE074950, BF831201, AA730937, F18565, AA092677, AW975227, AA664664, AI701784, BF527500, AA665052, AA521064, AA094070, H03245, AA552043, BE693458, AW886065, AI000083, AI128403, BF571166, AI674940, AI200568, N94464, H95707, AA657887, AI038336, F20977, BE673362, AI332537, BF683735, AI674878, L25345, F37912, BF239600, AI336903, AA654565, AF054175, and AF116639.
HTTKH22	428	101059 6	1 - 1790	15 - 1804	BG258097, BE565269, AW970826, BE972364, AW104509, AI935735, AA428565, AA948090, AI1149846, AA564462, BE972491, BF241442, BE144496, AA429521, AA741348, AI357926, AW296387, BG150242, AA412328, AI589867, AW205827, AI916262, T15665, AW090362, AI933368, R12639, BF360955, R20539, AI480273, AI698477, BF083192, BF083189, BF083190, BF229315, BF743777, BF083194, BE972369, AA825483, BE767465, AW371194, BE543997, BE768945, BF229316, AB046777, and AC009464.
HNOJG33	429	101069 8	1 - 1694	15 - 1708	AL514076, AU136058, BE871934, BF037005, BE734065, BG121727, BF340061, BE300394, BF203968, BF204799, BE300047, BE538261, AV761233, AW409777, BF805377, AW409668, BF205527, BF816400, BF679197, AV724965, BF206008, BE467989, BF445887, AI903791, AI500392, T64826, AA860771, BG152814, AI382895, AI903792, AW373027, F12113,

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HPDVK48	430	1011090	1 - 1811	15 - 1825	AI817702, BE734213, BG109696, BF343215, BG031900, BE902597, BF027605, BF027576, BE893930, BF591342, BE732160, BE384437, AI870638, AI816966, BF974651, BE732127, AW082941, AI955901, AI588852, T51227, T51341, BE732330, BE733010, BE799315, AA688018, BF827100, AB029041, D43921, D88508, and D88505.
HNORJ10	431	1011186	1 - 2847	15 - 2861	AU134078, AU119820, AU133300, AU126958, AU130520, AU133937, AV702394, BE877191, BE881502, BE877741, BG108056, AU119090, AU128582, BE782436, BE894349, AU133707, AI755105, AU116910, BG258563, BE788956, AV683379, BG118247, BE778857, AV702635, AU137107, BF965897, BG176784, BF976801, BE884018, AW239292, AI081900, BF978507, AW952777, BE875732, BG027117, BE877650, AI755063, BE878670, AV751366, AW949916, AI814464, BF678160, BG108194, BF571686, AW467192, AU154668, BE535701, AW392400, AA429941, AU146064, AW410667, AU155188, AW410666, AW994720, AW952816, AW129607, AI983856, AU143874, AU157027, AI922802, BG112073, AU153845, AU149778, AU152436, BE778846, AU150846, C06050, BG118808, AU153441, BF211683, AI204482, BF210654, BF217005, AW304738, AA887584, BF240843, BF678567, BF692112, BF571072, AA760671, BF923330, BG250728, BG119747, AA937180, AA504114, AW630580, BF696849, AW130041, AW055333, AU145515, C75335, AW237574, BE565110, AU130502, AI559451, BF572471, BG108209, AW080347, BE176786, BF340233, BF345008, BE737877, BE179704, AA410905, BF699275, AI042306, BF691962, AI752907, AI192876, AI924084, BF349490, BF246432, AA594633, BF794025, AI754970, N66338, AI342267, AA628679, AW674966, AW272202, AI673480, AW835336, AU156216, BE696419, AA171565, AW079029, BE696416, BF982798, AI921994, BF699321, BE696412, AW440948, AA664266, AI572874, D83902, AI754356, AI569623, AI625058, AW468158, BE539716, C75346, BE696421, AI541217, AA244037, D56430, AW794837, BE464416, AU149708, AA613984, AI520695, AA789181, AI818726, AA653377, BE738338, AW835340, AA156339, D53682, AW860422, AW800395, BF691025, AA598526, BE178042, AA904195, AW768275, AA204639, AW674968, AL121041, AA152250, BF919693, BE925260, AA367404, AW615031, BG260753, AA848082, W47003, AW862545, R71408, BE696408, AW860808, T32121, AA627976, BF690899, BF917679, BE937469, AA446236, D81210, AI721007, AW860804, D81637, AA659654, AA037225, BE184816, N23467, AW750094, AI476075, BE764312, M85743, AI446812, AI758576, T32145, BE177013, AA757693, BE712842, BF921651, BE767238, AA853819, BF326140, AI273910, AA279252, AA381186, BE160136, BE244985, AA152260, BE937463, AA508507, D83831, T35966, AA206071, AW753040,

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HPDRG92	432	101120 9	1 - 347	15 - 361	AL529603, T96738, R90778, H47758, AL529602, R94024, AA323896, AL523542, AL525995, N51812, AB033116, and AK001713.
HOFMQ81	433	101130 3	1 - 915	15 - 929	AL119457, AL121894, Y11587, AF118064, I48979, AF113690, AF130104, AF130082, AF130105, S78214, AF116646, AL110221, AF130075, AF113691, AF090934, AX046603, I89947, AF116602, AL389978, AF116639, AB048953, AF113694, AF118070, AL133640, AL157431, AB049758, AF078844, AL050393, AF113013, AF130059, AL117457, AL133016, AF116644, A08916, AF125949, AF111847, S68736, AL133606, AL359596, AF090900, AR079032, AF116691, AL359601, AF090943, AJ242859, AF116688, AF116631, AL110196, AF218014, AL390167, AL080060, AF138861, L31396, L31397, AF104032, AL049938, AL442072, AL117460, AL050146, AF119878, AL137527, AL162083, AF113689, AF130092, AF090903, AF090901, AL096744, A93016, AL442082, AL049452, I89931, AR059958, X84990, AX019230, AF113676, AL080124, AF113677, AL050277, AL122093, AL133093, AB048964, AX019229, A08913, AK026608, AK026045, AK026865, AB019565, AF090896, AK000212, AL050149, U42766, AL050116, AF106862, AB041801, AK025339, AK025084, AL133075, AK025772, AL122050, AK026741, AF119875, AL050108, AK026855, AF219137, AL133080, E07361, AF113699, AK025092, AB047615, AL049314, AK025958, AF158248, AF113019, AL162006, I48978, AL133565, AL389982, AL122123, AF017152, AL137459, E03348, AL359618, AF146568, AB050510, AK026583, AL049466, AF111851, AL133557, AK027096, AF119899, AK026744, AF119909, AK026784, AX006092, AL117585, AF116649, AL080137, AL122121, AL137557, AF207829, AK000618, AL050138, AL359941, X63574, Y11254, AF017437, X82434, AK026504, AJ000937, AF125948, AF091084, U91329, AK026533, Y16645, AK000137, AF314091, AK026452, AK026647, AK000083, AL137283, AB048954, AJ238278, AK026927, AL117394, AK000445, AL353940, AF177401, AF079765, A65341, AL359615, AL049430, AK026592, AB051158, AR087170, AL110225, AK024538, AF242189, AK027113, AK000652, AL049300, AK026532, AK026353, AK025484, AF116610,

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HOFNF27	434	1011315	1 - 748	15 - 762	AW665000, AL521066, AA089566, Z44690, F05145, AL514786, AI678039, AU131437, BE167328, AA926992, AA249468, AW971745, AW804686, AW392670, BE695785, AW861944, AW604723, AW877209, AW858526, AW858525, AL119483, AL119319, AL119324, AL119355, U46349, AL119457, BE705903, BE705906, AW577135, AW372827, AW384394, AW861889, AW858455, AL119497, AW363220, Z99396, AL119484, AL119363, AL119391, U46350, U46347, U46351, U46341, AL119443, BF868687, AL119444, AL119341, AL134538, AL042984, BF868697, AW604726, AL119439, BF868684, BE705905, AL119522, AL119396, U46346, AL043011, AL119335, AL037205, AL134533, AL134920, AL134524, BE705904, AL119399, AL043029, AL119496, AI142137, AL134531, AL119418, AW861954, U46345, AL042614, AL043033, AL042544, AL042965, AL042975, AL042450, AL042542, AL043019, AL043003, AL119464, AL042551, U90716, Y07593, AP000967, AF200465, AP001670, AL163204, AF124598, AF109645, Y10320, AF109646, Y11929, U90715, AF169366, AF242865, AF242864, AF169365, AF169364, AB026436, AR060234, AX046357, AR054110, AJ251859, AX030435, A81671, AJ279014, AR066494, AR069079, and AR043113.
HOFND52	435	1011316	1 - 591	15 - 605	AW971745, AW392670, AW804686, AW604723, BE695785, AW861944, AW858526, AW858525, AL119443, AW384394, AW861889, AW858455, AW363220, BE705903, BE705906, AW577135, U46347, AL134533, AL119363, AW372827, AL119497, AL119319, U46346, AL119396, AL119457, AW877209, AL119324, BE705905, AL119484, U46341, AW604726, Z99396, AL119341, AL119391, AL119355, U46350, U46351, U46349, BF868697, AL119444, AL119483, AL119439, AL119335, AL119496, BE705904, AL134518, AL119399, BF868687, AL134538, BF868684, AL119522, AW861954, AL037205, U46345, AL042965, AL042614, AL134527, AL119418, AL042542, AL042450, AL043003, AL042975, AL042970, AL043029, AL042544, AL043019, AL042984, AI142134, AL042551, AL119488, AL119464, AB026436, AJ251859, AX030435, AJ279014, AR054110, A81671, AR060234, AX046357, AJ251089, AR066494, AR069079, and AR080280.
HOFNL96	436	1011321	1 - 563	15 - 577	
HOFNF53	437	1011332	1 - 2384	15 - 2398	AF228061, AX014812, AF228060, AF228059, and AX014811.
HOFMU61	438	101136	1 - 1296	15 - 1310	

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HOFOF35	439	101149 9	1 - 731	15 - 745	AL520120, AU120794, AU142824, AU142738, AL524453, AL516006, AL531636, AL528608, AU135451, AW960802, BE255275, AF034175, BE251549, BE267417, BE787485, BG260926, BE866693, BF204561, AW402296, AW879901, AA130293, BE783678, AL536177, BE890412, AA026038, BF933394, AW995929, AF061738, AK022055, S65367, and AC006160.
HULFJ37	440	101153 7	1 - 901	15 - 915	AL528378, AU129753, AL523012, AL523055, BE881260, AL536136, BE379029, AI936124, AW157228, BF036785, BE907027, AI246564, BF684205, AW163233, BF032696, AW167783, BF115257, BE908959, BF206407, AW966037, BF058749, BE905304, AA873153, AI814898, AI653634, BF033796, AW167930, BE908776, BE612522, AL523011, BE312284, BE315082, AL528507, BE260964, AA657525, AA846556, AA581813, AW170322, AI675942, AU126752, AW073723, AW439343, AL536135, BE294834, AA905511, BF983613, BE736100, AI672867, BE271931, BE563428, BF033808, AA565888, AU151827, AU126743, AA443893, AU126776, AU126631, BE048096, AI288014, AI349513, AA605069, AA947686, AI354687, AI344761, AA968896, BG110190, BF036720, AA837515, AU126400, BF035189, AW473570, AA857612, AW243736, AI350498, AI363381, AA677118, AA670096, AA427949, AU151595, BE350678, AW182617, AI560969, AU129491, AV699411, AA622740, AA444088, AV700357, AI283102, AI689102, AA569487, AA126127, AA554302, AI653485, AV745161, AL516918, AI354641, AA856700, BE613105, AI358308, AA071541, AI243590, AI546836, AW005289, W76149, AA244008, AI422558, AA775927, AA063086, AA650016, W72586, AW001140, AV698390, AA550916, N92857, BE904189, AI546843, AA773276, AI302461, AL520795, W25583, AI127036, AU126711, AA037265, AA340693, AI185816, AA160689, AL516917, AA885582, BE866790, AA155767, AI904529, AI564903, AA659174, AW474443, AI051519, AA121966, AI494596, AI689031, BF743597, AI351481, BF743584, AI814052, AA428047, BF155259, BF761628, H99387, AA921901, BF799202, AI970995, AU126531, AA687198, AL520794, AA635808, AA126065, AI972309, AW170212, AA928381, AA364687, BF799608, AI784469, AA065175, AA232437, BF114899, AV702749, BE765150, AI758612, AA090244, AI363998, AI868371, AW150636, AI869410, BF743525, AA092613, N31429, BF689044, AA065174, AI566999, BF155224, C18016, AA525365, AI924384, BF743523, AA528748, AI784640, T28360, BE694608, AA095763, T54666, W19684, AI184108, AI536700, BF688256, AI214861, AA069147, AA834416, BF743622, AA340127, BF063999, AI819683, AA232438, BG055557, BG153008, N90030, AA075883, N88126, AA612817, BF434087, T50502, AA330721, BF743541, AA565183, AA092202, AV697304, AI364889, AI699968, AA428951, AI360411, BG222691, AI908085, AA292397, BF330544, AA630996, R72795, AA155766, AA095477, AA402271, AW366864, AA236707, AW371105, AA720944, BE832973, AI633889, T50637, AI989937, AA055038, AA121965, BE171278, W04805, AA069239, AW496797, T54753, AW799852, AX014110, X55110, I15236, M94250, D10604, AX015411, E04786, M69148, E12896, M34094, AB036426, M34327, M35833, AB025023, M19662, M34328, M61754,

HOFME75	441	1011607	1 - 1010	15 - 1024	AA063136, and AA155768.
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HCBBA51	443	101175 5	1 - 461	15 - 475	BF314829, AV712857, AW135421, AV756013, AV711642, AV706459, BE389248, AV762758, BE298463, AW873404, AV761365, BF974361, AV694674, BE385529, AV712150, AA035773, BE896094, BG028321, AA056334, AV712521, AA229819, AA314724, BF184153, BF244433, C14341, W68503, AA401339, BE378847, BF314729, AV751410, AV761330, BE378783, C14299, AV713770, BG059393, C14483, C14221, AV717163, AA308273, C14336, C14385, BE019161, AV709556, AV693316, AV764302, F21255, C13986, AV712395, BF696046, F24961, AA328328, BG230851, AW440694, AA135681, BE395394, W68387, BE730209, AA228680, AW009033, AA747774, C14434, BF941581, AI223384, AA622053, BF244539, AA010723, AI202387, AI073496, W07371, AI208241, AA533423, BE787471, AI223417, AV726474, AV728017, AV728046, F24716, AV726003, AW960673, AA853968,

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HDHEB13	444	101177 3	1 - 1157	15 - 1171	AI916779, AW304481, AA732948, AI288625, AW965223, AA443244, AA194106, W79527, BF511014, AI038644, AA443206, W93527, AA346195, W79559, BE296248, BE269743, AX039965, and AX039975.
HDTMG36	445	101182 1	1 - 453	15 - 467	BF972066, BF245607, AV703472, AV682014, AL038000, AV721711, AV728175, BF219386, AI133475, BF594923, BE837022, F22763, BF370629, BE830051, BF679794, BF693415, BE829971, AA528724, BE830055, AI479313, BE830057, F28205, BE717593, BE830025, BE836965, AA101196, BF973420, BE830061, BE830020, BE830059, BE818317, AA639940, AV734206, BE829966, AA501447, BE829985, BE830033, BE674258, AW772601, AA558672, BE837016, BE829982, BE830028, BE829988, AA082523, F36038, BE818328, BE836968, BE717560, AA603906, BE717609, F25953, BF975287, BE830032, AA886834, BE795191, F20554, BE830031, AI459928, AA747245, AA722455, AI417855, AA888508, BF837014, AI126653, AW102672, AI150214, AI479343, AW510846, BF109983, AA248555, AA559212,

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HVVCJ38	446	101183 0	1 - 2523	15 - 2537	BE410209, BE409948, BG115320, BE727135, BE275865, BE544451, BE247077, BF979132, BE276854, AI761191, AW190208, BF842485, BE552236, BE407430, AI401546, BF207408, BE910432, AW612622, BG009629, AW959204, AL135649, AI948809, AI209141, BE044454, BF768377, AI089727, AW589835, AA741117, AW054865, BE243221, BE512837, AW007188, AW024964, AW197517, AW192474, AI371883, AW732035, AI346775, BE273254, AI076529, AI086805, AI394074, BG113199, AI380843, AI613247, AI222796, BF112100, BF917505, BF842478, AW297124, AI523975, BE673122, BE502167, AW014930, AI655264, AA724818, BE243746, AI597975, AW470765, AI026618, BF923223, AA431124, AI684019, AI989704, AI862536, R51174, AA452620, AI285301, AI380975, AI380856, AI984759, AW295359, R35336, BE349571, R60756, BE503804, AW292516, BE247138, AI682541, BF923222, BG008918, N35451, AI302839, AA917488, W25150, H99364, AI972215, AI424358, BE243306, BE244991, AA937518, R48089, BE243647, R12836, AI262500, AI223148, BE242440, AW073337, R48082, BF815490, AW080459, AA576239, N35546, BE246634, AI954045, BE221690, AI809326, R46107, AW449766, AI954417, AW516184, BE247092, AA889557, AI799922, AI828634, BE242990, AW243116, AU127369, AI537699, AI867400, BF594684, AA514442, BE242999, AI553721, R60757, AI763211, AA432140, AI761010, BF510682, AW263306, AI763100, AW451349, R51058, AA470619, N24660, AI589437, BF315855, BE243714, AW000862, BF316405, AW960495, BF311549, BF347151, BE261173, BE672153, AA316825, R46448, R20746, BE260700, AA359340, AA995140, BE382562, BE707810, AI695433, BF983844, AI638588, BF304367, R47977, AW102776, BE246720, BE260234, AI934023, BE262038, BF838098, H41023, AW103559, AA354191, N93298, BE387142, BF206973, BF313395, R48998, BE241996, BF981535, BE241927, AW244155, BF984035, BF314395, BF973669, AA344952, BF761447, BF313034, BE261859, AA937240, Z40608, BE382532, AL031600, AF224741, U88844, Z67743, Z67744, and AF063100.
HPAMY22	447	101184 0	1 - 518	15 - 532	AW167128, BG230566, AW008822, AI521137, and S78079.
HE9CP86	448	101184	1 - 924	15 - 938	BE619589, BE778001, BG179191, AI990409, BE787128, AI056896, BF032589, BF210574,

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HPDOU46	449	1011883	1 - 933	15 - 947	AA885514, AW571544, AI925136, AV751974, AA934359, AI336032, AI818811, AW292295, N95268, W25222, AR038157, AC008860, and AC016612.
HFCDW73	450	1011901	1 - 703	15 - 717	BE612411, BF306028, BE295311, BF309599, BG114475, AW410748, BG178760, BF339804, AW839643, W01259, BE018592, and AK000376.
HOVEB13	451	1011919	1 - 1361	15 - 1375	BG031307, AW957996, BE299537, AA928779, AI685200, AA576884, AW514270, AI218215, AI809292, AI355487, AW082223, AW263592, AW152614, AA424504, AI265774, BG236438, AW070728, BE789393, AA933972, BG058626, AA927905, BE788048, AA707564, AI921682, AI431416, N30148, AA132983, AI085684, AI225124, W40249, AI630792, W60086, AA563939, BE326510, H68849, AA127446, AA135149, AA127445, W53030, AW058274, H80062, AA302211, AI240522, BF515623, H69149, AA247723, AA897766, AI589066, AA595935, BE734169, AA609608, AW606716, AA973544, BG170959, BE644966, AA576883, BE349394, AW665349, AA969337, AA969535, AI694323, R10513, AL045971, AW993256, AI860774, BG027280, BF904265, BE910373, AW148363, BG029667, AI633125, AL120853, AI433157, AI702073, AV762488, BF970768, BF338002, AI284509, BE785868, AV757012, AL514721, BG113299, AI866127, AL514731, BF814420, BF812961, AI801325, AI434256, AW827276, BF038131, AI500662, AI318569, BG166654, AI269862, BF795712, BG257535, BE963035, BF527014, BG110517, AL513807, AW772536, BG029829, BG249582, BG252929, AW169653, BF970449, AI539771, BE047852, BF338723, BE876033, BE885490, AL036780, AI364788, AI537677, AI521560, AI500659, AI274759, BE880182, BF812960, AW827289, BF032768, AI500523, BF812438, BF812938, BF339322, BE874133, BF970652, AI284517, AI500706, BF816042, BE047952, AI445237, AI491776, AW151138, AI633493, AI284513, BE909101, AL513687, AI921248, AI677796, AL110306, BG031815, AI929108,

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HPAMS93	452	101194 8	1 - 4502	15 - 4516	BG026454, AU136698, AA776842, AV707577, AV705003, AV706119, AV704393, BG112983, BF791105, BE501811, AI743650, AI671708, AI816789, AA723646, BE885350, AI636006, AW021004, AV726053, BF671148, W63546, BG249128, AW168299, AW665425, BF240936, BF692672, AA928542, AW950765, BE881258, AA846553, AI979064, AA742232, AW439829, AA449108, AA437197, BF695261, BE858197, AW134486, AA902878, BE546728, BF574789, AU152945, AI381912, AI684433, BF056144, AI139359, AI554413, BF381601, AI150427, AU157987, AW969822, AI424982, AW995211, BF351582, AA506295, BF209677, BE565044, AI088749, AI310443, AW512634, AA970921, AI359188, AA764772, AA827252, AA058552, AI362408, AW072743, AA766122, AI695798, AU157615, AW262974, BE835401, AA742318, AI623928, AA766577, AA513825, BF570645, AI394370, N51644, AI707846, AV721192, AI168421, AI348599, AA426385, AU155502, R78671, N59337, AU138435, R76132, AI433201, AA633541, T28713, AW103272, BE501987, R71309, AU131133, BF988802, N77145, R38553, AA084680, AW292597, R71256, AA053304, BE892939, AI474643, AV707777, AA346362, Z19210, BF800195, BE933905, AA970905, BE221948, H11501, AL121134, AA541406, AA373725, AV725851, AA348237, BF094439, R78631, AU139383, AA356852, R49221, BF086129, BE241955, D54215, AV721047, R42939, BE173266, AA348236, BE708094, BG109183, C00707, AA081650, F00029, AI699168, R25602, AI352064, R76083, BE835431, AU122860, F10470, BE501204, BE241571, R26998, AU134565, BE893499, BE244866, BF914011, AW237144, AI817847, AI968300, BE813282, BE878743, BF852756, BE241491, BF699184, BE708399, BE172638, AA879066, and M74089.
HCRBN71	453	101196 6	1 - 681	15 - 695	AA195119, AA195013, BF680123, BE219252, AA738440, BE540300, AI703457, AI183309, AA243291, AA243401, AI191561, AI292346, AI306531, AI817119, AI038422, BF211661, AI091896, AW051480, AA976687, AA243441, AI348605, AW015242, AI246250, AA989100, BF058616, AA831493, AA252613, AA459659, AA459782, BF570879, AI076966, AI784681, AA953732, AA931640, and AI383295.
HCRNC60	454	101200 5	1 - 2294	15 - 2308	AL527016, AL521200, AL524479, AL527060, BE734447, BG253129, AL521201, BF689091, BF965518, BF688892, BG166242, BG120159, AW007680, BG252573, BG027017, AI027899, BG250439, BG034762, BG028233, AL046964, BF688663, AA573191, BG250944, BE536191, BG250019, AL048451, AI983368, AI609925, AI391636, AW130457, BE018872, BG036095, AI925662, BG122085, AL524480, BG170360, BG121606, AI445752, BG121507, AA577112, AW513478, BF930780, BG034823, BE302383, AI814775, BE537945, AW874680, BG109535, AI655191, BE378060, AW769155, AI620523, AW950570, BF037587, AI690135, BF476375, BE273976, AW016285, BE273565, AA613365, AL516994, BG117073, AI624237, AI818796, BG251134, BF034144, AI697379, BE539030, AA506219, BE206559, AL516993, AU148176, AI748875, BE835356, AW190411, AA599544, BF921054, AU150378, AI436129, AA599412, BG118864, AA863094, AI687746, AI088772, AI075672, AI149159, AI766187, AA976487,

HSPSJ24	455	1012064	1 - 1316	15 - 1330	AI635119, AI587506, AU145303, AI610105, AW579433, AA481771, AA075727, AA182032, AI074869, AA652941, AW029339, BE504380, W52521, AI133597, AW251080, BE906785, AW020650, C75307, AW089491, AI755252, AA485345, AU144343, AU146091, BF058107, AI077647, AW003392, BE208415, BG251224, AJ223808, AI570985, BF930770, AL538312, AI754030, AU152450, BG121265, AI363400, AA449447, AA996250, BF817541, BG121843, AA071489, AA075778, AI832514, BF920992, AA576307, AW602058, BE835428, BE390409, AI668842, AA666134, BG121491, AI460155, AI763041, AW022290, BG026504, BE673214, AI970897, AA047403, AI088214, AA999872, AA548449, BF439853, AA533785, AI284855, BF841193, AL533394, AW014043, BE645964, AI810752, AI676086, AA036839, BE407089, AW008300, AA026364, AW026706, BF576954, AA603975, AW016424, AW868784, AA136374, AI270288, AW020004, W51870, BE835423, BF576171, W48802, AV702417, AI400352, AA036782, BG109283, AI146865, AI569917, AA158137, AI891011, AI362430, AI923482, AA133600, W49802, AI282476, AI535921, AA126441, AW732530, AI146893, W01436, BE744977, AI183506, BE746589, AA580887, AI023045, T11706, AA127710, AI095383, BE537332, AA133601, AW839205, AI620196, W46542, AA757994, BG119412, W44614, BE908914, BG253091, BG120375, W39465, AI668962, AA992675, AI909316, BF577061, AA532956, AA157692, AA582296, N99925, AA464871, AI188867, BF733918, W48657, AA157769, AA244378, BF811353, AW881180, AW839611, BE770073, W69962, AI869017, AW612457, AA533721, AI801717, BE812239, AI863569, AI085114, BG250322, AI459927, BE879157, BF688301, AA485500, AW581356, BE836046, BF724484, W96503, BF827959, M19715, AL050179, AJ001055, M19267, X12369, Z24727, M60667, M60666, M60669, AJ000147, M60668, M22479, M34136, M23764, X02411, AL358752, M36336, M19714, M19713, M17913, S78854, X66274, X64831, M34135, X02412, M23765, M34134, M15044, J00910, M36337, M32441, X04690, M17914, M18135, M16433, X57994, M69143, M16432, M69145, X16241, L02923, M15472, M69142, X16236, AF049587, X16090, T67490, T67606, T83927, T66598, T83755, R02794, R02795, R15972, R51819, H42385, H43150, H60858, H66300, H79726, N50186, N70802, N98487, W24260, W25300, W44594, W69961, AA046687, AA046797, AA047523, AA126548, AA135751, AA136288, AA161070, AA527266, AA533691, AA888457, AA994539, N84777, C01725, N86503, N87211, N89280, C02894, C03607, C04293, C04671, C04704, C04945, C05443, C05481, C05575, C05616, AA090758, AA089620, AA091667, AA093639, AA093956, AA094920, AA204927, AA216073, AA628665, AA835185, AA853133, AJ224925, T19748, F13809, AI262087, AI444980, AI567058, AI623830, AI619617, AI676026, AI676127, AI680055, AI688015, AI818202, AI826156, AI865486, AI802511, AI936073, AI933566, AW016295, and AW168719.
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HPCPB22	456	1012076	1 - 540	15 - 554	BG167998, BE081198, AC005250, and AC006477.
HOVDZ22	457	1012136	1 - 1190	15 - 1204	BE871201, AL079363, AI859755, AI151160, N47360, AI683204, AI827375, BE886069, AW369494, AA864845, BE770755, N56977, AA915977, AW627718, AW968202, BG252747, AA460264, AI359195, W22324, BE829260, AI082298, H37982, BG236816, AA620458, BG055923, H38203, AA991749, BF237665, BE770756, AA468461, BE704354, AI247941, AW470558, BE207909, BE829323, AI362578, BE833033, AA921753, AI867497, AI744126, AI783585, AA668493, AW451685, AL039988, BE165016, AA836177, BE693573, BF339879, AW270250, AI824219, AI216264, AI185891, AA505063, AA481160, AI123571, AI420255, AA463829, AI473334, AI554888, AA594994, AI202395, AI623088, AA505761, AI971348, AI263358, AI384099, AA234726, BF196906, AI417107, AA160515, AI004300, AA350704, T61636, BF094163, BE398137, BE267717, BE269084, BE267516, BE398095, BE397950, BE705905, Z99396, AW976502, AL119324, BF868687, AW861944, BF868697, AW804686, AW861954, AW969885, AW604723, BE695785, AW392670, AW976982, AW973209, BF868684, AW972292, AW973213, AW979194, BE705903, AW372827, AW858526, BE705906, AL119457, AW858525, AW577135, AW975002, AW975965, AW384394, AW861889, AW858455, AW970942, AW973219, AW970889, AW974823, AW363220, AW972377, AL119497, AW975952, AW972823, AW979127, AW972845, AW971403, AW974801, AL119319, AW975876, AW975966, AW969673, AL119443, AW971968, AW973252, AL119483, AW877209, BE705904, AW976511, AW975154, AW604726, AW976023, AW969791, AL119363, U46350, AW979212, AW975037, AL119335, AL119496, BG059382, AL042614, U46341, AW979204, BG153750, AW973270, AL119484, AW970113, AL119391, AW970627, AW971387, AW972884, AW973189, AW973202, AW972695, AW973805, AW973770, AW972719, AW976515, AW975976, AW979165, AW976510, AW969818, AW971954, AW972680, AW975975, AW969884, AW972943, AW969759, AW979083, BF592735, AW970587, AW973650, AW979175, AW975646, AW973986, AW979064, AW975938, AW975016, AW975019, AW975138, AW975968, AW970921, AW969766, AW979116, AW973185, AW972806, AW973987, AW975910, AW975943, AW972689, AW972706, AW973164, AW970097, AW973824, AW971964, BF588769, AW975904, AW974379, AW969752, AW975227, AW976037, AW973718, AW973967,

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HBZSK53	458	1012240	1 - 812	15 - 826	BF311945, AA573955, BE272773, BE563532, AI205315, AW160842, BE902005, BE261848, AW951052, AI247509, AW160847, AW162381, BE260271, BE394195, AA158241, AA552227, AA682673, AW977784, AI445208, AW083990, BG167471, AI142942, AI139661, AA151647, BF055277, W51775, AA902783, W49523, AI831943, AA977542, AI344595, AI350350, AI439566, AI818831, AI261413, AI991292, AI266611, AW514380, AA306292, AI358932, AI718114, AA429579, AI423083, W80604, BE675912, AI718228, AI523860, AI143448, AA432139, AI090465, AA954640, AI085397, AA631070, BE538110, AI363402, AA733065, AA984904, AI660966, W48670, AI190092, BE676065, AA612812, AW104262, AA653079, AW261940, AI223979, AI523945, AW270000, AI750115, AA978047, AI300204, AA569148, AI129908, AA644008, AA715305, AI222391, AA032056, AI262474, AA766275, AI309951, AA917686, AI268587, AI363403, AI266575, AI084868, AI032228, BE785787, AA811091, AW663483, AA031920, AA918011, AA432330, AI351278, BE044385, AA876021, AI857658, AI673477, AA768844, AI160107, W49524, R67696, AW351509, AA748636, BF802108, AA832382, AA978061, AA805201, AA160838, BF663301, AA621587, AA627983, AA569031, AV706578, AI343867, AA938352, W51925, AA745920, AA886173, AA455371, AA456011, R66095, AA731749, AW905884, BF958963, W80603, AA641565, BF958968, R77511, AA806716, AI380276, AA811186, R77585, AI032240, AI380346, AI144561, BF001946, BF447194, AI696133, AA936222, AW381956, T28808, AW008792, AW292340, R24242, AW296152, AI867529, AI524303, AI659130, AI672577, BF800229, AA627736, AW169557, AA054546, W94819, AW368945, BF818801, AW368926, AI680585, AA636017, AA054605, AI686369, AA151728, BE163318, BF063215, AI738553, BE906185, AI219206, AA601515, AI202296, AA431125, AI972929, AA593134, AW374327, AA954620, BF800216, AA554557, AA639642, AI810889, AI340218, AA281762, AI379209, AI351301, AA594840, AI797854, W96037, AW451496, AW966330, AV742732, C14331, AV738340, AV741220, AV742735, AW975618, AV718681, C14429, AV724520, AV742048, BE744646, AV718489, AW973541, AW973445, AW177440, AI709272, AV699550, AW753053, AV744690, AV718692, AW964468, AV701004, AV701125, AV701166, AV701149, AV741191, AV699927, AW752082, AV741221, T03269, AV742001, D80164, AV720791, AW949654, AV738928, AV701154, AV720533, AW964766, C14389, AW966053, AW951169, D59467,

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HBCPH02	459	1012453	1 - 1430	15 - 1444	BE748869, BF970794, BF109702, BF981345, BF197326, AI300552, BF219195, AW964590, AW163294, AU118237, BF107178, AW957100, BE567746, AU150552, AL046520, AW893994, BE671865, AI376741, BE465805, AU148817, BE763405, AW298504, BF836318, BF056808, AI949526, AI766147, AI620120, AI192681, AI140674, BE840892, AA868721, BF091198, AV652131, BF666129, AW663986, BF365557, AW043639, AI989546, AW337182, W78826, AI039003, AU156430, T75226, AW451577, AW293998, AW351808, AW295214, AU153154, AW803385, AA430259, AI510818, AI308083, AI671263, BE769464, AW803255, AW803392, AU156278, AA099306, AL040713, W45375, AW276921, AI872944, C17821, BE049636, BF848474, AI696052, W57547, AI962395, N22077, AA171668, AI342101, AA099816, AA992066, AW803326, AA193330, AW005014, W04771, AI628191, AI635617, R99125, T48495, AA592987, AI934241, Z43316, F08940, H80457, H81377, D82795, AI122977, AA284696, AA284590, AW337979, AA173427, BE185818, AA953291, AI251824, AA160137, R67589, AA369820, AI364187, T35490, F12859, R35378, AA369819, BF877494, BF877495, BF955988, BE769588, AA169306, R05772, AA194113, AW996501, AA001824, BE939044, AI658789, AA905018, AW996634, AW057868, AW404006, AA430050, Z40765, BF431206, W40159, AW087302, C19047, R51240, R05858, AA693378, C01276, AI735529, R44456, Z38249, F02058, AA002028, AW473147, AI524541, R99667, AV646092, T48521, AI873873, H90424, N75320, AA296739, AL043736, T27288, BE171992, BE748278, C16664, BF667063, AI471687, BE545906, W28705, BE844099, W80725, AI932539, AA321790, D82809, AU136017, AI535689, AW391533, AW448998, AA766709, AW502434, AW977442, AA825646, AI056222, AI084972, AI784081, AI696000, AA026072, AI381964, AI275012,

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HCONM62	460	1012454	1 - 1884		15 - 1898	W18182, AL525625, AL516217, AL525577, AL516292, AL529355, AL518107, AL516216, AU141983, AA909718, BF797162, BE622593, BF688983, BF311705, BG117288, BE383732, AI935289, AI080630, AU134220, AA837568, AI680478, BE877487, BE799345, BE893825, AI951804, BE744943, BE880709, BF309943, BG170968, AI991856, BG032671, BF204389, AI418328, AI357756, BE869355, BG167780, AW514721, BF980576, BE902483, BE792330, AW001239, BF975628, BF982977, BG032139, BF690594, BF525334, BF684388, BG118865, BG167158, BE251548, BG122927, BG171316, BG259291, AL525204, AW305084, AW192510, BE541096, BF663597, BF182932, BF206116, BG163234, BG025967, BG106864, AL515477, BF970914, AA993402, BE378346, BG261021, BE874229, BE384576, AI963784, AW993536, BE547496, AW246394, BG113859, BF688592, BE512789, AW189185, AW439691, BE812374, BF205676, AW951440, BF033109, AU151473, AW245456, BE265299, BE312336, BF316503, AU151697, AU150525, BE407306, BF692367, AI762490, AU134112, N25538, AU159393, BE304333, AW296048, AA424439, BE780223, BG056169, AA604819, AU159323, BG112191, BE407298, BE812344, AU151618, AW410780, AI336881, AW468675, BG033215, BF928628, AA522716, BF755505, BF811268, BE044067, AU159742, N54545, AI922523, AI682016, AW247794, BE300178, AL525203, AI365462, AU151606, AU153392, AI951424, AW263576, AA622398, BF806870, AI989357, AI627223, AI890790, AI187155, AI371729, AA043459, AI951372, AI041776, AI159756, BE384278, BE928952, BG112278, BF569675, AA133071, AA047459, BE734100, AU120641, AW589573, BF346402, AW083362, W24389, AW072651, N76248, AA774414, AA424342, BE301090, AI075428, AI696741, AI753295, AA838037, AA548619, AA133070, AA132794, AI587117, AW197123, AA779035, BE966986, BF806863, AA088170, BE207325, AV656844, N34135, AI393008, H73708, AI476534, AI445307, BE328267, W29082, AA569485, BG009549, AA017383, BE174588, AA827611, AW779490, AA574398, AI290657, AI969487, AI084138, BE782015, AA047393, BG111353, BE812190, BF998419, AW601144, AA371969, T67525, AW874236, AI569140, BG165953, AL046641, AA226982, AA838649, AA088627, BF081730, BF325572, BE260928, BF798486, BF570004, BG250197, AA093382, BE937964, H63015, AW591486, AI370258, BE003077, AI567154, BF307874, H54695, H74223, BE909384, BF998405, N24832, AW514463, AI370348, AI174567, AA043460, BF804424, R74044, BE937910, N31758, AA376329, BF763897, AW469866, AI832887, BF944382, BF798766, AW262260, F03125, BF813431, AI026987, Z39968, AA954888, AA210678, H62886, BF745359, T19942, BG013875, BG011181, BG011075, AW952004, U22055, AB021491, AC008039, AC018662, U83883, AC006529, AI005814, Y14314, T69523, R00187, R00188, R49118, N24558, N67922, N93666, AA493178, AA531599, AA535083, AA535648, AA552531, AA633021, AA864940,

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HOGEU69	461	1012459	1 - 1076	15 - 1090		AI041834, AU131484, AI200980, AU131609, AI523472, BF035100, BG260988, BE906446, BF679739, BF312184, AA916757, BE786938, BE907375, BE882435, BG104553, AW003881, BE541116, BG251041, AA489052, BE042721, N25127, BF109620, AL119362, AA575865, AI814469, N23048, AI188945, AW194097, AA814140, AA991228, AI828232, AA044782, BE252873, AW193148, AI085157, BE147999, AI022397, AI189984, AA724929, AI351066, AI056076, AA938240, AA996103, BE018234, AA280782, AA488800, AI087074, AI199451, AI128165, AA262090, AU138117, AW591232, AI355359, AI356853, AA524527, AI360277, AA033520, AA280788, N20582, AA559009, AA676465, AI088598, AI311465, AI354780, W15254, AW946384, AI914929, AA508033, AW081777, W37433, H99944, AA034194, W39240, AI750152, AI040726, H99681, N28443, W37434, AA508041, BE010703, AI095133, AA508696, W38448, AI891015, H99648, N24439, N28712, AA969522, AA508060, BF130256, AW886258, AW886126, BE833921, AI266525, AA935334, AW886221, N94573, AA446386, H95004, AA825415, AI149761, BE092707, N25807, AA229348, AA825216, N28974, AV708464, AA228658, AI358053, AI372872, H99558, AV709572, AA040692, AA878281, R20044, AA508042, AV713109, BE242250, AA040691, R53806, R14634, N57352, H95115, W30863, H99287, N79830, AA044805, AI040716, AW768986, AL036353, AA043927, AA351987, AL134252, AW998436, N27404, AA223132, N29420, AW029461, AI289949, AA423964, AA126593, N29428, BG170431, N57360, AI749508, AA033617, BF916002, AW798880, BE932959, AA127239, BE932960, AA423965, H23023, BE092701, AI686200, M74090, AR019525, M73547, AC008536, U28168, and D55682.
HVVBD93	462	1012469	1 - 1081	15 - 1095		BE738428, BE622930, BE388215, BE728140, BE273270, BE253146, AW975614, AI828072, BE622113, BE740360, BE256369, BE513955, AL049117, AW246698, AI937156, BF952983, AW025197, AI569648, AA777531, AI200937, AI373492, AW082024, BE266217, BE727220, AW615439, AI131087, AW294607, AI890725, AW026504, AI955337, AA291355, BG255058, AA604477, AA213760, BE396916, R43170, BE264280, BE266305, AW088137, AW130381, AW293476, AW024648, AA725718, AA243878, AW872893, AI079160, AA991781, AI024096, BE277815, BF762401, AA714463, W04697, BG164126, AA749289, BF312230, AW173655, BF311310, AW872898, R72214, BE275756, R72173, BG035135, T81447, AA287579, AA852947, AI420773, BE273124, AI918030, AI934666, BE313702, AA287580, BE207070, D31321, BF884206, R81123, AA707587, T81446, BE737821, AI187858, AA703769, AI918961, H39080, BF206747, BF725734, AA852946, AI003595, AW196317, BE260174, AA426248, AI380772, BE295171, BE264554, AW009932, AI014898, AI699193, AA403296, BF342292, BF725972, Z41538, AI686972, AI468396, BE270370, AW081691, BE263952, D31040, BF207215, BF972786, BE294861, BF089748, W31799, BE882427, BF310977, AA243886, AK025906, AK024609, AC002472, and AC007664.

HCOMV86	463	101248 2	1 - 1807	15 - 1821

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HCONJ23	464	1012519	1 - 2066	15 - 2080	AL521287, AL521286, AU121333, BF034311, BG110423, BF982633, BG036657, BE889009, AV729379, BG168009, BG109870, BG258659, AI871993, AV658812, BF924696, BE789299, BE439392, AV705254, BE537571, BG250363, BF980701, BE785130, AV713479, BG259998, AI127415, AV714279, BF696027, BF577070, AI590917, BE882652, AW955631, AW855845, BF243381, AI435362, AU123306, AI984070, AW950649, AA767367, BF196954, AW949971, AA777629, AU152315, AW391781, AA779983, BE837794, BG032566, BE827757, AI354543, BE538840, BE717861, AI768125, BE717868, BF241607, AA426581, BE717859, AU153311, BE717848, BE827713, AU151880, BE827712, BF435369, BE717784, AL538303, AU146818, BE837746, BE827708, AW029240, AA670141, BF541036, BF197078, AA846794, AW338008, AI290479, BE717864, AI566144, BF241865, BE717766, AI697905, AI435413, AI275053, BF109919, BE837686, AA429080, BF343367, AI935821, BE830406, AA258548, AA992354, AW328118, AI538483, N23156, BE717719, AI332908, AW197265, BE302002, AU158434, BE540701, AA829064, AI435147, BE830389, AV656425, AI968065, BE717822, BE830411, AV687182, BE830409, N55086, AA476392, AI141833, AI937312, AI799494, AA448823, R93768, BE717823, C05021, AA448822, BE830419, BE830546, AI266320, BE717792, BE830393, BE717805, BE837744, BG261310, BE830457, BE538541, AA258602, BF815967, AI140691, BE830514, AA479965, W23180, AA625070, AW051979, AI188905, AW104834, BE538228, BE830551, AI022795, R41740, AI474203, AA233917, AW805520, AA478745, W90651, AI961454, BE717826, N67224, BE620125, BF204054, AW515522, AW385321, AA055196, AA938572, BF114988, BE717753, BE767225, BF447344, R98972, AI168789, AW168671, AI375094, AA344073, AW805519, AA992343, BE837650, H12351, AW834700, BE830554, BE830539, BE830558, AA055286, AI810280, AI283725, H59983, T88778, BE830459, R98882, AA383987, AV760328, N34539, AI918061, AA328975, R48616, BE830479, BF939050, R17189, AA037794, BE830556, BE837724, BF939897, BG259278, R48722, BE830559, BF057817, AI674862, BE792039, N62785, AI864068, BE830468, AI468804, T35292, BE830439, W07252, AW192978, T97604, R27615, AA303044, AA344116, AI758453, N78823, AA298049, AI864841, AI968791, BE830403, AA234165, BE830530, AI630255, N77297, T97557, D12223, F00453, BE830454, R30849, N32736, AA812484,

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HVVBL04	465	101253 6	1 - 656	15 - 670	BF969790, BE674362, AW592590, AL038838, BE937105, AL037436, AL038822, AL038761, AL040617, AL044186, AL041238, AL047012, AL044037, AL047170, AL040463, AL040576, AL041752, AL045684, AL040625, AL047219, AL044162, AL041602, AL043492, AL045817, AL040839, AL043677, AL040193, AL043467, AL040510, AL040621, AL043538, AL047064, AL043496, AL040464, AL046442, AL040553, AL038983, AL041133, AL041324, AL040322, AL041098, AL040119, AL041955, AL041096, AL041159, AL047057, AI142134, AL040075, AL039432, AL041163, AL041168, AL041292, AL038532, AL041358, AL037727, AL045753, AL041296, AL040332, AL041142, AL041346, AL041635, AL040529, AL040370, AL040745, AL046330, AL041197, AL040128, AL047036, AL040294, AL044074, AL040342, AL046327, AL041233, AL043923, AL043814, AL043845, AL039643, AL040285, AL045920, AL041277, AL041730, AL040472, AL040091, AL041523, AL043627, AL044064, AL040155, AL040052, AL041459, AL041131, AL041374, AL041577, AL134524, AL045989, AL040149, AL042135, AL046850, AL040444, AL043848, AL039744, AL040768, AL041051, AL043570, AL044199, AL040168, AL044272, AL046392, AL037343, AL046994, AL039316, AL046914, AL041086, AL037335, AL040458, AL044187, AL040148, AL045671, AL079852, AL045990, AL049018, AL044258, AL040253, AL041227, AL041347, AL044165, AL044274, AL037435, AL079878, AL041140, AL041186, AL040571, AL040238, AL042096, AL039338, AL043775, AL040090, AL041278, AL040414, AL044201, AL045725, AL039360, AL039915, AL043612, AL045857, AL044125, AL037295, AL043941, AL040082, AL037443, AL040329, AL037323, AL040255, AL040263, AW969625, AW968190, AV745951, AL041246, AL043444, AW970540, AW970070, AV759219, AW970079, AV729746, AL042898, AV732294, AW969778, AW969911, AL037341, AV692600, AV732613, AW970076, AW970101, AW969653, AV760852, AW968212, AV761360, AV762836, AV764028, AA311523, AW970020, AV745615, AW969624, AV759241, AL049069, AW969677, AW969664, AW968207, AW970107, AW968204, AW970105, AW969848, AW969936, AW969961, AW969648, AW974805, AW968340, AW951011, AW970093, AW970108, AW969916, AW969621, AW969626, AW969926, AW969631, AW969634, AW970118, AW970074, AW970069, AW970095, AW970531, AW969632, AW970096, AW970023, AW970053, AW970122, AW968148, AW969958, AL041210, AL047037, AW969934, AV745725, AW969691, AW970003, AL045328, AW976040, AW970013, AW970054, AW970115, AW970050, AW968150, AW970082, AV763316, AW969676, AW970014, AW969651, AV745196,

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HVVAF65	466	101254 2	1 - 2397	15 - 2411	AI718272, BE172473, AW950787, AV691361, AI694578, BG165602, BE908696, AI692948, AI435139, AW952424, AI749626, AA706620, BF435793, AI457978, N30162, AW594533, AI803132, T62985, AI302429, N66853, AI202793, AA934418, BF002753, AI344483, AA137137, AA828635, AA040849, AA137066, AI344480, AI970958, BE817251, AI266685, AV654372, AA193479, AA040205, AV646828, C15337, AA095042, H62021, D80729, AA602312, R96139, H65659, BF215297, BF673930, H15643, AI675539, T27662, H63016, R16219, D53152, N35776, AI439733, R67281, H72388, R16218, R96356, H61952, H72834, H62887, AA872751, H65660, F04944, BF803114, AA810796, AA079159, AA355280,

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HCONN76	467	101254 5	1 - 2256	15 - 2270	AU121806, AI419322, AI375649, AA740857, AI923670, AU135618, BF974977, AI018493, BF972585, AV703204, AI580165, AI358951, AI949126, AI686544, AA890179, AW276428, BF974392, BF057399, BF593620, AW574807, AW384107, AW384111, AW384089, AA419530, AW384094, AA457042, AW378570, AW384086, AI689293, AW273393, AI610786, AI421949, AW954203, BF740135, AW305311, AA826781, AA148159, AA143789, AI243289, AI093096, AU147786, AA928572, AI094995, BF971481, AU154441, AA593863, AI991650, AA974953, AA630151, AW241907, AA487958, AU147378, AA112842, AI289031, AU148064, AA262949, AI187750, AA477235, AU152719, AI192762, AA291508, AA835410, AU147554, AA410900, AI275426, W63575, AI346888, AA975468, AI031872, AA149698, AA858199, AW090334, AA765920, AI347761, AI027390, AI734036, AA233688, N35403, AA233694, AI524762, AW169347, AI393690, AA233658, AW408537, N31876, BF683137, AI347762, AA232871, AI968983, AA233653, W49782, AA425969, AI961848, AW470581, N23975, AI218887, AI142748, AI379185, AA134943, AA053202, AA053117, AW360883, AI167537, AA514209, T60073, H61837, AA904089, AA127822, N30725, AI581987, AW802186, AA456886, AA426260, BF739150, AA456006, AU156178, AA127870, BF432078, AI468773, AA865246, AA587601, BF737239, BE710654, AA405416, BE699641, AA970821, AI263749, AA193601, AA954886, AA193638, AA402922, AA306065, AI000822, AA411349, AI150890, W48763, AI074634, AI382743, AW376350, AA477236, AA366868, N36466, AW794580, N25748, AW749051, AA295337, T28945, AW802239, AA295418, T99843, N98766, AW798065, BE886694, N48037, AA304560, AA004402, R35815, AW748384, AW390099, W30997, AI460116, AA303818, AW505188, AI915251, BG055292, AA128000, AA135020, AA421890, AA487959, AA304120, AA370424, F01957, AW793017, BF379088, AA151896, AW236287, R00415, BE243368, AA702709, AI559797, AI953687, AV699166, N41337, AW880777, AA294897, AA307162, F05704, BF115416, BF908893, BF925691, AW496798, AI825370, AI953746, C02666, BF953388, AA361869, AW371607, R74116, AA128097, BF129208, AU121592, H61838, AU133022, AW403738, BF974893, BE005171, BF836392, AA004322, AI865200, BF739143, AU122119, AA525968, AI432644, AI623302, AW059878, AI432653, AA521365, AW969217, AW081103, R88402, AA287544, AI431307, AI431316, BE893692, AI432654, AI431238, AI432650, AL134524, AL119457, BE880000, BG028055, BE782316, BE877515, BG024493, M30817, M33882, M65087,

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HVVAF56	468	1012568	1 - 1907	15 - 1921	AL514054, AL537008, AL532603, AL535940, AL538399, AL529001, AL529002, AL537022, AL515506, BE748601, BE379647, BE856256, AI745675, AL538398, AL515505, AI718655, BG109288, BG106676, BF967665, BG254245, BF967445, BE782963, BG029254, BF341020, BE883878, BG029156, AI718665, BE880488, AL515399, AW239191, BF697586, BF666823, AL514053, BF669209, BE834020, AI628483, AV717613, AW170524, BE380120, BE748186, BF799917, AW664448, BE885331, BG116480, AW965398, BF978100, BF666698, AV733960, AI744093, AW951553, AI769591, BF572884, BF184368, BF576290, BF740061, AI972760, BF698691, BF218148, BE380074, BF672537, BF696554, BF185121, AI671368, BF699714, AI651178, AW338334, BF184985, AI491949, AA506351, BF671044, AI887192, BF000141, AL538204, BF185179, BE091061, BF103713, BF244535, AA479280, AA527565, BF691787, BE538280, AI453749, AA617680, BF509619, AA479375, AW965970, AW880520, BF240551, AW880512, BE538506, BE883435, BE564099, BE858573, AA489078, BF699134, BF679492, BF696899, AA292851, BF691104, AA148518, N57541, AW338167, AA515506, BF132517, BF697822, BF185037, BF681165, AI241342, AA968660, AA398752, AW601531, BF207851, BF978006, AW630103, AI629010, BF211123, AI809824, AA729569, AL538205, AA700576, AL515400, BF185504, AI285333, AI289314, BF668156, BF218929, BF184023, AI340156, AI278410, AA488831, BF132590, AA490516, AI879719, AA887318, AI084319, BF572822, AA506418, AI095818, AI291825, AA733156, AU126177, AW297453, BF678475, AI304744, BE169675, AA991500, AI298123, AA887921, AA659090, AA215332, BF699920, AA730676, AI276733, AI049785, BF216046, BF239649, AW352077, BF375287, AA214556, AI857748,

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HODEG95	469	1012599	1 - 735	15 - 749	AV706891, AV707794, AV702857, AW964231, AV728309, AV705290, AV762633, AV702172, AW955724, AV759559, AV759295, AV718260, AV760777, AV763401, AV764379, AV762098, AV761107, AV711465, AW955841, AV762067, AV764051, AV763276, AV711535, AV759149, AV762973, AV709273, AV759340, AV764176, AV763457, AW966064, AW963489, AV759766, AW953953, AV759660, AV733749, AV761524, AW963592, AW962006, AV763178, AV759437, AV763439, AV713243, AV762870, AW957644, AW964213, AV764329, AV706410, AV759919, AV755512, AW962942, AV761904, AV763417, AV759967, AW962264, AV760725, AV759435, AV761127, AV726754, AV763558, AV762015, AV729411, AW962136, AW962444, AV732986, AV759191, AV762393, AV728369, AV764228, AV759557, AV761714, AV759199, AV729657, AV761862, AV760106, AV703998, AV763388, AV729947, AV711430, AW961606, AV710404, AV762730, AV762852, AV759290, AV707230, AV759503, AV760721, AV734690, AW956077, AV761273, AV733830, AV761653, AV760371, AV764230, AW958318, AV760508, AV759329, AV706814, AV759112, AV763684, AV759541, AV735132, AW961593, AV734859, AV764078, AV763418, AV762009, AV757642, AV759972, AV760230, AV764034, AV759417, AV762059, AV762242, AV757526, AW962713, AV759507, AW963895, AV759675, AV652936, AV710733, AV755677, AV759359, AV758355, AV756020, AV762898, AV714057,

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HVVBK78	472	1012645	1 - 630	15 - 644	BE762446, BF964007, Z99396, BF868687, BE705905, AW861954, AW861944, BF868697, AW804686, AW372827, AW604723, AW392670, BF868684, BE695785, AW969818, AW858526, AW858525, AL119497, BE705903, BE705906, AW969714, AW577135, AW384394, AW861889, AW858455, AW877209, AW363220, AW969819, AL119319, AL119363, AW979212, AL119443, AW975037, AW973185, AL119496, BG059382, AW969885, AW979204, BG153750, AW604726, AW973270, AW970113, AW972884, AW973189, AW971387, AW973202, AW972695, AW973805, AW973770, AW973213, AW972719, AW976515, AW975976, AW979165, AW976510, AW971954, AW972680, AW975975, AW969884, AW973130, AW972943, AW969759, AW979083, BF592735, AW976982, AW970587, AW975876, AW973650, AW979175, AW973986, AW979064, AW975938, AW975016, AW975019, AW975138, AW975966, AW975968, AW970921, AW969766, AW979116, AW972806, AW973987, AW975910, AW975943, AW972689, AW972706, AW973164, AW970097, AW973824, AW971964, BF588769, AW975904, AW974379, AW969752, AW976037, AW973718, AW973967, AW975933, AW973734, AW979169, AW973207, AW979176, AW972882, AW973104, AW975028, AW969782, AW970868, AW972868, AW973985, AW973210, AW975648, AW971129, AW971403, AW973209, AW975971, AW969930, AW972864, AW973219, AW969658, AW972440,

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HVVBK73	473	1012646	1 - 733	15 - 747	AU139028, AU136137, AU137891, AU135546, AU138700, AU137082, BF992828, T46923, AU136711, BF992829, BG002838, BF956994, BF997301, BF997306, BF803266, BF812082, BE929910, AA299528, H04349, AA367974, AA300047, BF086216, X78212, U11862, U11863, AC006343, M55602, and AF218035.
HCOMW35	474	1012652	1 - 1044	15 - 1058	AI684897, AI200892, AI478735, BE561321, BF001430, BE269357, AW274694, AI798122, AI554564, AI554553, AI681112, AA576942, BF064055, BE559728, BF063173, BG057298, BE269083, AI281053, AA291322, AW661889, AI311456, BF514281, AI347538, AA291323, AA835642, AI417683, AW080290, AW015465, AW510740, AI620444, AI659037, AW977226, AA731234, AA642457, AA689434, AA731232, AI797545, AI425078, AA947102, AI280944, AA809333, AA732232, AA737649, BF055737, AL513907, AI637584, AL514919, AL515375, AI824557, AI284020, AL514627, AI701074, AI520785, AI362637, AL514357, AW198090, AI889376, AI433157, BE048071, AL513553, AI702068, AL514473, AL514691, BE018334, BF726504, AI274013, AV729336, AL514929, AW827289, AI801544, AL514063, BG180034, AL514205, AI564719, AI624279, AL513977, AL515019, AI567351, AI560099, BG249582, AI475817, AI539687, AL047763, BF726868, AL515191, AI590227, AW243820, BF793324, AI569583, AI702406, BE047737, BG112718, AL040243, AI702073, AL513781, AI538716, AL513693, BF727092, AW262565, AL514025, BF726322, AW663332, BF726451, AL514085, AI925156, BG164371, AI610402, AW169671, AL515413, BE904178, AL045266, AI608936, AL513999, AL513779, AL045500, AI567993, AL513597, AW303152, AW827276, BG120816,

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HVVBJ28	475	1012654	1 - 1936	15 - 1950		AL528408, AL522973, AL529995, AL530141, AL526233, BE275004, AL529395, BF343867, BG256905, BE872845, AL526193, AL529394, BE868712, BE883888, BE273090, BE383725, AA399958, BE388651, BE391299, BE895693, AW967063, AA165444, AW009236, BE395414, AA017606, H29686, AA683274, AI751272, BE544783, BE671807, AA165445, AI823998, AI659213, AW270895, AW302260, AI937006, AW470682, BE968707, AV755754, AA317291, AI337198, T63207, AA393623, AW805340, AI751271, BF889263, AA401400, AW805193, AI075114, AA088644, AW002097, T62957, AA317025, AA017493, AI627659, AA400608, AW073145, AA019385, BF941438, AW271790, AA700742, AA789211, AA088225, H29600, AI760822, BE183202, AA019384, BF590759, AI284395, AI865624, D59319, BF593686, AA401401, C20664, AA677572, AI767804, AF026851, AF151033, and AB019410.
HVVBR45	476	1012657	1 - 3619	15 - 3633		AU120634, AL528938, BG116777, BE744455, BG024541, BG105634, BF526006, BE548428, BF340790, BE297483, BF795604, BG250467, AW950002, AU124855, BG177719, BG035815, AU128003, AI908284, BE382499, AA129775, BG254170, AI279893, BE747515, AI827715, AA527855, AI885559, BG027992, AI991310, BF527629, AI885197, N25675, BE222933, AU129326, W58477, AI890549, BE968759, BF983508, BE788617, AI040322, BF737414, H93013, BF344426, BE897190, AW007050, AI924625, N25714, AI446043, AW118763, AA493370, BF057508, AW873581, AI860982, AL526630, BE046501, AI912360, AW516934, AU151479, BF762977, W73794, AA496467, BE907961, AI814467, AA142925, AW362918, AL157574, AA856581, AA948060, AA043690, AI872192, AI147489, N34061, AA878451, AA844016, W58403, AI860592, AA232217, AW086196, W75973, AI268108, AI141580, W73743, AI207799, W69080, AI366057, AW080053, AA028882, BE786506, AI366035, AA854738, AA564463, AI131222, AW303984, BF737413, AI033389, AA143148, AI761635, BE173656, AI280409, BF852593, AA780584, AI890510, AA977605, AA879112, AI609052, AA936565, AI274918, W23983, BF874699, AA693455, AA135704, AA845282, AI679279, W69683, AA701883, AA580563, BF796519, W00612, BF738570, AI148025, N24101,

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HVVAF41	477	1012665	1 - 1389	15 - 1403	BE748731, BE748763, BE748704, BE748542, BE738542, BE379806, BG248894, BG254845, BF793482, BE739520, BG024667, BE546206, AV764107, AV710004, BG165568, BG106140, AV653833, BE880236, BE748668, BG032118, BG119765, AL036245, BF676015, BE778251, AV710461, AW955246, BF672659, AV757407, AL036186, BE881539, BF672708, BG030502, BF699618, BF672658, BF211316, BF669231, BF666671, BG166568, AV658796, BF212420, BE748247, BG169620, BF212264, BE884781, BF667759, BF699625, BF207694, BF665900, BE777521, BF215125, BF701217, AV650138, BF574853, BF575581, BF211437, BF791257, BE566395, BF665569, BF700142, BE379886, BF668671, AV715701, AV715023, BF669152, BF666977, BF672605, BF665908, BF576266, BF212430, BF665627, BF699403, BF698941, BF699441, BF238765, BE569019, BE566225, BF207543, BF207758, BF242453, BF695572, BF665909, BF028287, BF211015, BF667649, BF677662, BF103958, BG110207, BE738197, BF668144, BF184116, BE958206, BE379971, BF028523, BF209852, BF694862, BE866755, BE739256, AA579646, BF701199, AW817835, BF667118, BF672681, BF978665, BF669842,

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HVVAQ70	479	101267 8	1 - 1441	15 - 1455	AI885244, BF034672, AU123624, BE783137, AI741132, BG166410, AA732560, AI635830, BF967991, AI924179, BE548833, BE885454, BE548297, AA133349, BF983768, BE619631, BF034843, BG032544, BE619045, AV713932, AW003603, AI858259, AI858621, AW665674,

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HVVAQ22	480	1012684	1 - 2477	15 - 2491	BG035278, AW439636, AI720580, BG251307, AW152647, BE858233, AA846544, AW958873, BG123005, BF448602, AI922544, BE393115, AI095622, AI129334, AA454065, AI042420, AW445149, AI925396, BF433345, AA613660, AA526844, AA541652, BF800735, AI125298, AI186177, AA494344, AA613440, BG110232, AW130308, BF126435, AI126911, W72714, AA460946, AL048605, AA635415, BF061310, AI187345, AI679797, AA927694, AA991772, AW169345, AI146909, AA935323, AI141982, AL039662, AV726350, AA595987, AI143142, AA526603, AW956892, AI203856, AI041798, AA564147, AI074102, AA142908, N99150, AV726204, AW961250, AI192623, AA594463, W95026, AA715244, AI167714, BF681572, BF681252, AA715250, AA916523, AW239362, BF679172, AA613293, AV648901,

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HTAES83	481	1012693	1 - 3090	15 - 3104	AL528871, AL528870, BF689540, AI088498, BG029109, BG163818, BF690458, BG121525, BE677687, AW118573, AA293678, BF939462, AW009834, AA477666, AI985062, AA477549, AI660877, AA744380, AI760847, AW075908, AI308772, AA603083, AW188550, AI359884, AI003144, BF846444, AA827136, AA857190, AW014572, BE779584, AA291912, AW204044, AI457772, AW394050, AW604877, AA425834, AI989635, BF224014, AA428432, AV761585, AI251454, BE242176, AW083897, BF893844, BE812514, AI289616, AI537835, AW601203,

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HOCMN67	482	1012700	1 - 1363	15 - 1377		AL524901, AL524902, BF346000, BF974670, BE300440, BE613761, BE298717, BF305443, BE737079, BF315660, BF975373, BE900875, BE794605, BE561418, BE297884, BE396794, BE513285, AL529353, BE560182, AW732675, BE560298, BE396870, BE392195, BE251954, BE397849, BE559742, BE869296, AW674368, BE273242, BE513542, BE939301, BE396873, BF899554, AL523561, BG036335, BF975060, BE712864, BE712991, BE712989, BE712980, BF366123, BE764733, BE816334, BE712872, BE889264, BE939316, BE712995, BE712968, BF091964, BE836278, BE712925, BE712910, BE712914, BE712939, BE713048, R88246, BE712933, BF590942, BE712954, BE836306, BE712957, BE712905, BE712898, BE793722, BE712951, BE713021, BE397330, BF353840, AI424305, BE713046, BG259170, BE764762, BE712893, BE711115, BE713029, AW966962, BF663330, AW843896, BE712908, T28088, BF353844, BE836190, BF993734, AL119235, BF806263, BE247329, BE712941, AW245699, BE713039, AA324644, BE713045, BE712907, BE713000, BF353823, BF935628, BE764756, BF767291, BF873692, BE256697, BF312944, AW793930, BE713031, BE939814, BF905030, AW246049, AA255647, BF898057, AW967945, AW408770, BE071408, AA291247, BE071380, BF803081, AW856222, BF751657, BE071379, AW881797, BE838899, BF942875, M80776, X61157, M34019, M87854, S48813, S81843, AF087455, M87855, U08438, U08437, U08435, Z64532, U08436, and AB012255.
HAPOW35	483	1012711	1 - 684	15 - 698		BG107619, AL522537, BE787836, AV762511, BF248284, BF667269, BF577158, R11727, BE565643, AA378120, BE798891, H08058, BE293634, BE395888, AA232695, BE250045, AA195384, AW327299, AI915592, BE733913, BE538250, AI123566, AA456540, BF572380, AA312705, H19735, AA442143, AL522536, BF978828, and AA418920.
HOVJM48	484	1013085	1 - 987	15 - 1001		BF514360, AI984072, BG104550, AW968769, AA447067, AA490806, BE866640, AA683471, BF155603, BF088348, BF088352, AL119141, AA490615, AL037910, AW591443, AA857381, W23546, AV762136, AI524540, AV682490, C14692, AW402458, AA508873, AV764104, AW977540, BF475757, AW276984, AW513195, T52478, AA176605, AW819567, BF766734, BE151470, F17700, BG057491, AW819626, BF964699, AW780137, F32710, AW151764,

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HBJHY84	485	1013213	1 - 1512	15 - 1526	BF513481, AI979334, AV750733, AW150342, AI554025, AI917181, BE466873, AA677977, AA836452, AU129610, AA747905, BF379175, AA214482, AI453218, AW959298, AI275918, BF059687, BE067524, AA810010, AW379211, AA301486, AA214481, AA214445, BF379159, AW082876, BF379158, AA721103, BF355470, BF355489, BE939440, BE548541, AB046771, AK000688, AK000703, AB052148, AK001514, and AL356321.
HODEY05	486	1013215	1 - 980	15 - 994	AA676907, BE907847, AA151808, BE178106, AA465289, AA099035, AV681964, BE931939, BF126400, AV713960, AI968768, AA169424, AW070222, AW243844, BE348296, AA586596, AW016834, AW816384, AA761449, BF222953, AI990337, AI718942, AI807357, AI805276, AW510884, AI026648, AI655423, AI337899, AW514709, BF108752, BE326928, AU150814, AI925967, AI688125, AI334211, AI458611, BF055542, AI367596, BF446726, AI017955, AW273107, AI719981, AI653813, BF239166, AW117292, BE464800, AW003783, AA992935, AA151706, R34792, AW193690, N56974, BE326479, AA826184, N50399, AA903397, AI623937, AI626024, N64085, AI627773, AW515818, AI491985, BF955678, and AK001514.
HFIAS44	487	1013288	1 - 1810	15 - 1824	BE886149, AW375593, BE269242, AW957836, BF530063, AW375621, AW957911, AW846341, AW375628, BE514122, AW846424, BG030265, AI811330, BF530319, BE869746, AI815588, BE868627, BE732069, AA557637, AI568426, BF313483, AL041389, AW402679, AA406384, AW375475, AI934752, BF155423, AA406342, BE168512, AI968463, AW973674, AW607132, AW846515, BG254619, AA406497, AA313680, BF816414, BG248281, T18893, AW604300, AW604302, BE538503, BF743311, AI206416, AA406519, BG248377, BF732203, BF854744, BF331846, BF087586, R17426, BF834809, T31135, H80276, AI784072, T65203, AW875193, H80290, BE535225, AA247392, AV750366, BF896281, AW973606, AV746827, H60654, BF922334, BF922374, BE936802, BE834304, AI695115, AA813331, AW975890, AW962644, BG236141, AI983327, W56290, BF197086, AA444138, AI816541, AA514456, AA843581, AI049963, BE221699, AI587092, AA250772, AW263993, AA046111, AI206498, AI183986, AW513618, AW664318, AW771830, AI888536, BE221175, AA485368, AA628369, AI580963, AI367671, AA443975, AI049696, AI061268, AI366699, R23237, AW169087, AW151048, AA369024, N24093, BE075974, AI872289, AI049602, D80579, AI150944, AI626126, AI870066, AW166332, AA098961, AA283206, AI887547, BE075635, BF887600, AL121101, AI338261, AA047064, AA182785, AI252230, AA411078, AA412144, AW662033, AL041390, BE542595, AI761472, AI813797, AI762565, AI275243, BE926636, AA612773,

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HHAUD68	488	1013349	1 - 2010	15 - 2024	AU125260, AU143224, AU137482, BF979962, BE905320, BG110056, BE888357, AW954111, BF026567, BG029311, BE886387, BE787743, BF036993, BE005810, BE066803, BE005792, BG106111, BE005659, BG030463, AV716755, BE066786, BG031259, BE778590, AU135372, BE887428, BF034840, BF338135, BE868838, BG112573, AV712560, BF214840, N45714, BF213704, BF028304, BE885061, BE536630, AI356584, AI347088, BE395083, AI681921, AI188394, BF858245, AU126274, BE777483, AI096867, BF678510, AI949239, BF184121, AA707270, AA633307, AW958965, AU157193, AI690981, AW239297, AI200952, AI669681, BE005608, AI798809, AW089548, AW008494, AI890758, AI018475, N23783, AA725815, AW470025, N51271, BF247190, AI568976, AI359668, BF695947, AW009914, N20100, AI139586, BE044205, BG120837, BE005731, AA860476, BG037171, BF825690, BF857560, AI129987, BG260980, BF826918, AI718666, AI207986, N51936, AA768749, AA912686, AI383741, BF857536, AI245880, AI189601, N67649, AV654895, AA946580, N48992, BF826941, AA632226, AA167747, AI356794, W46970, BF826915, BF026656, BF058150, BF858239, BF826920, AA056425, W47070, N95707, AI911483, BF840837, BF857539, BF244858, BF696908, AW771738, BF840835, H82727, AW377477, BF241650, BF857561, BF572620, W70038, BF857538, BF837203, W81364, AI219967, AI245295, AI383740, BF837231, R62245, BF825157, AI961325, BF826913, AA487374, W38741, AI183329, BF826942, AI681827, BF826926, AA659102, AA828479, W00832, W81623, AI827180, BF516055, BF691072, BF825243, BF577004, AA487168, AA332859, AI129023, AI017064, W04513, BF381139, BE243202, AA384913, AI538100, AW770150, AA167647, AA361670, R59853, AA374619, W31455, AA056374, BF028286, H83601, AA865845, BE242044, AA723853, BF215949, R17124, AA064891, AI302004, AL121936, U90549, AC018752, AC073095, W01099, AA177121, AA249743, AA487257, AA487320, and AA680190.
HEEAA89	489	1013436	1 - 770	15 - 784	AW959616, AL135608, W22896, AV691197, AV692570, AA157308, H23082, AV683581, AA062798, BG249373, AI934999, AA480943, AI969520, D81149, F07060, W90404, AA299769, D60727, BF904504, AA233997, AI829619, BE876051, AA299827, AW006228, AW502192, AW499693, AW499650, AW501778, AW499690, AW471169, AW502898,

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HNTAK22	490	1013524	1 - 3509	15 - 3523	AL536370, AL533357, AL533536, AI131336, AW007658, BF344552, AU120249, AI005333, BF968191, AU123605, BF339036, BG104516, BF342185, AI818341, BF341089, BF338566, BF448661, AW519118, BE897793, AI922459, AA595338, AA481702, AI573172, BF343104, AW580751, AW029232, BF338201, AA481466, BF341564, AI811324, BF340578, AA522691, AA838064, AA431924, AW960586, AU127761, BF340086, AI249784, BF737829, AI907170, BF724377, AI332914, BF724960, AA490462, AI167296, BF724935, AU146370, AW838943, AI247322, BF091112, AW571482, AI972197, AL047823, AI452419, AI913043, AI281146, AA973378, BE839067, AL047803, AI566503, AW627773, BF912663, BE839213, AI358043, AW840300, BF856591, AI536813, BF939426, AW192039, AI685213, BF912667, AW838897, BF344794, W92281, AA283179, BF673568, AA563581, BE839253, AA568563, AL040503, BE063215, AI868006, AV704904, AI370569, BE243977, AA490684, AA477377, AI468524, AA714627, AW471279, AI678831, R49217, BF838940, BE244521, AI906145, BF343096, BE836117, AI469506, BE810532, AA595306, W92141, AW057582, BF511204, AW268697, AI539663, R31060, AA477772, AA596047, BF753087, AI742615, AI270525, T11643, AA973709, N93506, BE926227, AA527536, AW169984, AI815135, AI300224, AA443710, AI249321, AW103874, R70422, AW662932, BF913493, AI075341, H27076, AI538134, AW838918, AA477882, BF912716, BE844036, BE770137, AV750559, BE844009, AL047801, AW368290, N69960, AA614578, W21318, AA975702, BF770664, AW631089, BE772925, BF917313, AL047631, U53094, R46353, BF871119, BE243637, AW608388, AW519176, BE770131, AI648417, U53081, BE772931, C00811, BF749312, AA528240, R69441, AW351478, T04974, R46444, BE843765, AA295483, M85547, BE709154, AA443526, AW608283, BF841670, AW838934, AA602219, AA077339, BF092146, BF738433, AA077291, BF912721, BF092200, AW838892, BE938581, AA853204, AA077832, BE815760, BE720190, BE844003, AI914522, AA327286, AI872571, R85073, AW662967, AI926219, AA993064, AW839839, AW748245, BF943528, AW800423, BF850312, AW175924, AI798599, BE772434, AW878667, BE927001, BE938331, BF841498, BE843958, BE938306, BE157335, BE843775, AW385891, R35420, AW361539, AW839348, BF851191, AW385903, BF087246, BE836089, AF053944, D86479, AF053943, E07353, AF043942, X80478, AC006454, and AA976886.
HOVBX78	491	1013687	1 - 747	15 - 761	AU128231, BE272526, AU130195, BE164466, BE164464, BF085254, AW813416, AK001556, AK001751, and AX017389.
HVVAW74	492	1013740	1 - 1076	15 - 1090	BG256269, BF530210, AL535365, BG254956, AI937808, BG255962, AA894922, BF570250, BF527816, AI826416, BF570040, BF345133, AI004246, BF761093, BG110667, AW026128, BE548730, BG107551, AA890692, BF982691, AI658655, AI802988, AI186105, AW516805,

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HPAMV95	494	1014003	1 - 1393	15 - 1407	AU140401, AI738421, BG031482, AI280092, AA400097, BF850021, AW083889, AW592654, AI742697, AI016064, BE903250, BE902947, BG104467, BE892580, BE302880, BF027402, BF726476, BF081511, W49684, BE409089, AI125462, BG032552, AA862329, AA486280, AA700818, BF820549, AI122804, W49694, AA400168, R11861, W49722, AW151672, AL045993, T53335, BF847816, AA962206, T48826, AW631078, BF884099, AA627637, BF737680, AW838008, BF357901, BF883577, W49721, BF988013, BE930738, BE930747, AW888969, AL046421, BE929077, T73984, AW498792, R68647, BF996158, F12365, BF850158, BG008754, R68697, BF037441, M85579, AI073794, AL533644, F07268, T29410, T54278, R24085, R26961, M85403, R22150, T48827, C01506, F27655, BF990588, AW361499, AA364950, AA853311, AA853874, AW380283, AA369501, BG004874, T53334, AW276429, R22149, BF986774, T54386, AA702765, BE762911, BF104742, AI611200, AA323024, F37322, BE747589, BF932773, C18912, AW996016, BF765531, AW998862, T50035, BF350192, H29127, BF668920, BF928730, AW998744, AA505775, AA298422, AW946325, AW946276, BG005177, T50090, AA542979, AI826634, AA112696, BF839409, AW373948, AI370444, N31154, N29691, N29692, BF823044, N50793, AL047256, AI640179, BG030359, M32304, J05593, AF127803, M82858, X62622, U44385, U14526, M32303, S72594, S82718, E12461, L31884, AF112115, M93954, X54533, X75924, AF144764, AF188489, AF156030, AF069713, AJ010315, AF095638, S68860, U44384, U44383, U44382, U44381, and AW270911.
HOVBX22	495	1014041	1 - 314	15 - 328	AA714453, BF843214, BG222269, AV760543, AA767963, AI241705, AI439360, AA548087, AA737154, BG000467, BF841448, AC004815, AL121653, AC005482, AL138733, AL133246,

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HPDRB63	496	1014204	1 - 1394	15 - 1408		BG261404, AI655109, AI769371, AI673814, AI867165, AW271689, AW973626, AA488104, BF475415, AA492547, AA554212, BE905098, BF377593, BE790712, AI962754, AI703142, BE787290, AC003006, AK000077, AC010326, AC004017, AK026941, U38904, AC003682, and AB040941.
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HCOPQ33	501	1014730	1 - 2431	15 - 2445	AI382146, AI348085, AV724179, AI670844, BG121803, AA778708, AW994011, AA576678, AA628091, BG027051, BE348559, AW005563, AI744134, AI934455, AW080366, AW303312, W46414, BE925834, AW360836, AA527295, AW130000, AI676052, AI970798, BE818697, BG056521, AA420456, AI870355, BE673868, AI379929, AI076205, BF063542, BF057010, AI299871, W95308, BF061770, AW005638, AA420856, AW151188, AI380233, AI681309, AW183687, AI498936, BF805203, AA535677, AI364948, AI538944, BF344175, BE813569, AW276611, AW072243, AW087477, AW381053, AA913619, AW003292, AA400464, AV681764, AA912521, AA778589, AA884178, H90010, BF763632, AA975310, AI453423, AI572187, AA884334, BE645760, AV660830, Z33575, AA657762, AA331097, BF341434, AW193094, H90100, BE004867, BE003539, BE927533, BF762288, AI281304, AV709786, BF093386, AA469215, AA983635, AV725548, AA469143, AI985948, BF931023, AI014655, AW075227, BF439017, AI467955, AA400739, AW994272, AW629195, AI934198, AI968800, AW951463, BE833871, BE833897, N92393, AW897800, AW020030, AW374875, H88219, AA770266, AA333065, AA375477, H89609, AA322324, W94793, AI810275, AA622877, C15879, AW235096, H88220, AW360802, BF925976, H89373, BE868139, N80276, AA385905, BE004865, AW888412, AV750371, AI270170, AA090808, AW293597, BF858923,

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HOEBR36	502	1014754	1 - 1170	15 - 1184	AI830209, BE892339, AA056177, AW090080, AW959783, AW959780, AA639200, AI126271, AA858013, AA046424, AA947131, AA302895, BE171412, AW959774, AA302900, AA661502, N68025, AA302899, AW149294, AA302894, AW804757, AA970770, and AC005225.
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HOEER36	504	1014869	1 - 3039	15 - 3053	AV713485, BG036534, BG170867, AI114598, AI111173, BG036983, BE150520, BE150675, AW961549, BF001502, AW966635, BF058522, AI111172, BG107400, BF683214, BE182687, BF513307, BF513304, BE348776, BF211600, AI686319, BF434037, AW009260, AV751640, BF437703, AW182505, BF434712, BF448430, AI658772, BE706456, AA570410, AW178382, AI138925, W84417, AI674263, BF184557, BE706455, AI352522, BE045375, AI202369, AI814344, AI141165, AI129867, AA913359, BE714168, AW615181, W38032, BF667748, BE674831, AI499784, AW237447, AW615373, AA291444, AI148057, BE348487, AA854179, BE706450, AI077329, AI215899, BF817382, AI275129, AW408721, AI301615, AW014525, BF431546, AI246490, AI143146, AW020055, AW149486, AI479250, AA772266, C14273, AI924398, AI719548, AW131580, AA120892, AA643857, AI298759, BE676037, AA191426, AW178336, AW514636, AW150733, AI041121, AI206905, BF967845, BF955169, BF693178, AI445939, AA446925, W67115, AI478785, AW165974, AI499669, N31994, AW390141, AW418759, AI498926, AI970714, AW968513, AW337533, AI660155, AI363053, AA461221, AI095282, AA779601, AA478839, AI304699, AA992491, AA024881, N63209, AA505701, AI090759, AI913992, AI766836, AI076142, N30241, AW380390, AA884384, BE706402, AL045996, AI190727, AA635512, AW025253, AI654598, AI830690, AA854125, AA227639, AI094000, AI762540, AI863564, AA421630, AA554337, AI354541, N31668, AA032235, AA443348, AW380690, AI470075, AI418779, H18718, AI476471, AA889499, AI435164, AW341930, W38992, AI268787, N32541, AI660523, BF197310, AW439788, AA805244, AA024841, T05966, BE219831, AW057869, BF109078, AA024760, N57135, AI147635, W67116, AA316131, AA160223, AA483817, AA747030, BF057333, AA680140, AA614781, AW072149, AI521097, AA150539, T65551, BF749204, AA954811, N98640, AA460918, AI122872, BF057345, AA906065, AA970380, AI000154, AV724982, AA737575, T65618, BE327373, R83612, AA446007, AW418748, W67360, BF058074, AA227491, R83759, AA424865, BE706452, AV701935, AA877727, AW360967, AA024759, AI379985, AA512913, AI302491, AA906988, AA132381, N29103, W79433, AA625948, BE714160, AA621021, H27412, H09870, H82388, BG142122, BF108978, AI306648, H98146, H82361, Z45598,

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HE8OX75	505	1015010	1 - 1021	15 - 1035	BF508570, BE644977, AV721684, BE856604, BG028865, AI570575, AI744298, W49489, AI693612, BE326589, BE222091, AI916606, BE218632, AI635636, AI928148, AI765683, AW961248, AA970114, BF433076, BE670991, AA702087, AI077996, AI638631, H40653, AI078395, AA846631, AI039434, AA233302, AW052158, AI702147, AI637587, AA932630, AI799774, H27897, H08753, AA327485, AI470586, T15460, AA054083, AL036382, AW276842, AV763971, BE047069, AI963720, AI633390, BF668217, BF942454, AI061334, AL046409, AV740801, AI708009, AA491814, AA623002, AW082108, AV763255, AA526979, AV764307, AI051816, AA581903, AI814735, AV761786, AV762395, AV762111, AI568678, AW833862, AV735370, AI273968, AV759274, BG059568, AW575742, AI344844, AL041690, AW979031, AW029038, AW193265, AV762826, BG231262, AW439558, AA578861, AA610491, AI783494, AI350211, BE677379, AI355206, AI284640, AI613280, BF887977, AI374809, BE156019, AI281881, AL042420, BF942059, BF942223, AW088846, AI064952, AW662543, AW083364, AW083402, AI431303, AW473163, BF918590, AI679782, AI345654, AW276827, AA525898, BF216716, AI801600, AV728928, AW517377, AA632994, AW972628, AW504669, AI634384, AL119691, BE350475, AW303876, AV703682, F36273, AW189303, AV760937, AV763354, BF883012, AI619997, AA806796, AV683151, AI873916, BF915247, AV734666, AI334443, AI368745, BF939954, AA469451, BF942311, AV731764, AV763633, AV699480, AI305766, BF919090, AW438643, AW088202, AI807650, AV762139, BE046438, AI610159, AW162049, AI239488, AI929531, BF854876, AW467735, BF942068, AI345681, AI141675, AI345675, AI085719, AA714453, AA468131, AI886629, BF915722, BF475381, AA569471, AV760624, AW082492, AA503258, AI669453, AI688846, AW104748, AV737044, AI792287, AW303196, BF840676, AA535661, AW274349, AI890570, AI251436, AI796627, BF940837, AV700487, AI471481, AA493471, AI962050, AI375710, AW513362, AV719316, BE206443, AI611990, AV710066, AI521679, AA225246, AI053672, BE049095, AI889781, AW193432, BG171096, AI860020, AW301350, AA219129, BE139267, AA947364, AI270117, AL040130, AI890928, AV761362, BF849758, AV761489, AV760774, BF962283,

HVASI06	506	101502	1 - 2920	15 - 2934	AA226153, AI168185, AI339850, AV764241, AW419262, AI368256, AA713815, AA843450, AV699370, AW576391, AA720702, BG058664, AV762558, AI589230, AL119713, AI620724, AF063563, AA551552, AI955323, BE243412, AA877817, AA631507, AA810318, AV759362, H71429, AA670468, BG169853, AI266576, AW972769, AW272758, BE139358, AW820127, AW270270, AL117471, AL022316, AC016554, AL357992, AC004999, AC008267, AC005031, U57004, U80017, AF084195, AC005000, U57007, S75201, AF015153, AC016642, AL079340, AL137790, AC005773, X74558, AC009228, U47924, AL353807, AC007993, AC010281, AC008738, AL031055, AK025032, AL118506, AF015149, AC004010, U57006, AL359272, AF077058, AC006512, D83989, AC007722, U18390, AL034412, AK022938, AL161788, AC005264, AC068499, X55932, AC008078, U18396, AC004009, M94634, Z95114, AL355481, AF015148, U18392, AC004234, AC018728, U57009, X75335, AP000082, U18391, AL031255, U18398, X55925, AJ277892, U85195, X51956, X76070, AC083870, U18387, AE000658, U18393, U57008, I51997, U18394, U57005, AC010645, AC006238, AL121886, X54180, AC019014, X53550, U18395, AC078842, AL354915, AL009029, AC006392, AF015157, X54175, AL109804, AC005221, AC004941, U18399, AL158830, AL139396, AL121752, AL391259, AL035659, Z82217, AL021938, AL033375, X54176, AL161670, AB041992, X55926, AL356748, AF184110, AF015151, AL354750, AL137802, X54181, X54178, M19364, U73479, AF015147, AP002529, X55931, X55924, X55930, AC005815, Z83844, AF015155, AC007382, AL133353, AF015167, AL355540, AP000305, Z97987, Z93017, AL354864, AL159152, AP001717, U18400, AC004853, X54179, AL445590, AC025471, D14872, AF015158, AL022322, AL162212, U62317, AF156539, AC006057, AC006292, AC016601, AL356863, M37551, AF261899, AF181449, AC006059, U67801, U01102, AC006126, AC004087, AC004870, AC068919, Z98043, AL023494, AF015162, AC005690, AF015166, X55922, AC010219, AL355306, AC008066, AC011751, AC005606, AC007543, AC007151, AC002449, AP000115, AF039590, AP000047, AC006449, AL049844, AC009477, AL031577, AC004672, X55923, A39972, AL159168, AL022156, AL118497, AC035147, AC009001, AC005189, AF064863, AC007065, AK022281, AL137008, AC006276, M87919, AC004460, Z82245, AF003627, AL049856, AL161731, AB052151, AC005480, AC005876, AC010478, AL136295, AL365509, AC009123, AF015160, U52111, AB048999, U02532, AC002470, AL121920, AL360272, AF050154, AL161937, AC004838, AL096678, AL391839, AC005391, AL353602, AC018639, AC005162, U38672, M87925, AL356278, AC011666, AL450224, AJ251973, AC077690, AL133245, U67234, AP001342, AL357560, AP000359, AF031077, U35114, AP001666, AC005071, AC004826, AC008088, AC007371, AL390793, AP001686, AC005599, AL049762, AL353802, AC004047, AF015152, AL049776, AF137396, AC007324, AL450226, AL121913, AP001224, AC004594, AA017658, AA054197, and AI253214.
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HDPXP07	507	101505 9	1 - 2230	15 - 2244	AU143256, BF155736, AV715833, AI826460, AI814455, AI884890, AA769310, BE934114, AW966220, BF790844, AU152276, BF033751, BF576977, AU153650, AW166211, AI864665, BF081591, AU160375, AI084922, AW292992, AA779447, AA829630, AA025234, AI823888, AW418525, AI452519, AI360060, AI684798, AI655985, BE961037, AA026021, BF433538, AA026295, AA766554, AW770982, BF208277, AI276257, AA394033, N64369, AA825817, AA393837, AA435643, BF361706, AA639510, BF217285, BF672893, D60974, AA286843, AI689818, AA251918, AA807639, AA435651, AI246329, AA251762, AW772604, D25894, BG009135, BF736545, AA286844, BE967276, R22470, AA665974, AI570715, BE180751, AI702262, AA026294, BE935513, AW631147, BE812849, AI685029, H26865, R22420, AI565266, BF827750, AA090746, AA337356, T24552, N41739, BE170545, AW890651, AA169886, AW795854, BE935255, BG012432, AV692600, AV697880, AK023226, AY007102, and AK023074.
HE2KH02	508	101509 3	1 - 3564	15 - 3578	AL527105, AU132761, AU116991, AU137245, AV728472, AU137316, AU137381, AU139297, BG261206, AU136360, AU139962, BE549369, AA081939, AI677834, AU157422, AU135906, AI920927, BE785633, AA454989, AI907113, AW664875, BF591622, BE042932, AU154230, AA454990, AI378574, AI936349, AU138016, BF447224, BF337029, AI431805, AW360838, N95598, BF107069, BF084965, AI911175, BF110906, AI221497, AI379409, BE501519, AI424080, Z98481, BF084957, AA236458, AA905045, BF575997, AA553994, AU157090, BE894931, BE891457, AI032765, AI417372, AU156358, AU157150, AA236564, BE568360, AI697933, AI818384, Z98482, AI921677, BF888050, AA445961, AI082210,

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HSPSI60	509	1015133	1 - 2217	15 - 2231	AA631938, AW271824, AI793342, AI582327, AI284346, AA694067, AA285037, AI040042, AI683785, AW504437, AA282330, H11593, AI800992, AI139177, AI090037, AI804488, AI040087, H11679, AI279357, AI264909, AA282229, AI381465, AI199387, AA908723, F09528, F11880, AI240419, AI784560, AW865862, AA501653, AI243707, AI868576, AW576309, F11200, F08866, AA282817, AA278915, AI537020, AI801505, BE138594, AW591276, AW505253, BF769368, AV699840, BE968744, AW069227, AW026305, BE077105, AI421950, AW327649, AI419337, AV738383, AA857812, AW023111, AI310670, AV700192, AW338035, AI797998, AW338021, AI890324, AV718506, AW438542, AI361090, AW084445, BE244178, AV763026, AV763058, AA515728, AI335387, AA282951, AW514662, AV730986, AI538852, AI187148, AW327624, AV756491, AA873573, AA916430, H73561, AI310787, BF839844, BF528591, AA173166, BG029528, AV695953, AA410788, AA719073, BG036370, AI369580, AI821420, AU159329, AA501461, AI114534, AW328202, BF530611, BE893315, AA568204, AA570740, AA483606, AA526542, AI347603, AW500127, AW088656, AA614139, AW978041, AI090377, AA226584, AV755512, AI279417, AW973992, AA664604, AI267356, AI349130, AW467536, AW969743, BF763954, AI889579, AU159185, AI634187, AI267450, AA807704, AA773463, AA634837, AW068596, BE084668, AI491765, AI871691, AI380617, AC004644, AC004494, AC008403, AC004815, AC005399, AC004216, AC007597, AL031311, AL121890, AF111168, AK001397, AC012309, AC008407, AL034417, AC025447, AP001727, AC005696, AL109843, AC004181, AL137073, AC023344, AC005666, AL035659, AL035662, AC005200, AL079303, AL356299, Y14768, AC020908, AL035413, AL022163, AC008745, AC005095, AL049839, AL034429, AL096791, AL031300, AC005300, AL132653, AC010163, AL096702, AP001747, AC006388, AB000876, AC006487, AL355530, AF088219, AC005921, AC006023, AP000302, AF111167, AC010422, AL118520,

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HOCOC26	510	1015143	1 - 1279	15 - 1293	BF966811, AI139894, BG118263, BF195527, BF304431, BE313788, BE890485, BE894627, BE314751, BF966263, BF432361, BE735161, AA883980, BF663221, BG106026, AW961104, BG106361, N36835, BF593985, BE778904, BF594016, AL523105, BE314195, W57556, BE384447, AW516745, AA651722, BE464689, BE206345, BE385654, BE903910, BE314758, AA233222, AA081411, AA576915, N43012, AI027450, AA813248, AA434399, AI685850, AI336025, AA434496, AI161302, AI085313, AA632104, AI084094, N30353, W04936, N57768, AI200803, AI333484, N55453, AA422072, BE019744, AA826596, AI084015, AI341871, W80670, AA233146, AI378563, N33349, N62846, AI339805, N34024, AW272713, AI242276, AA554001, AI459956, AI200074, AA635564, AA927412, AA814024, AA632073, AA628055, AA482362, W80669, AA251750, N46055, AA081410, N47028, AA719788, BF436220, N48163, Z45692, N63935, AI032947, Z41359, AI364376, T32008, R08771, AA922239, AI149973, W46253, AI222458, AI674237, BF364286, AA829780, N59733,

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HHEDC05	511	1015204	1 - 1091	15 - 1105	BF798056, BE898210, BG168649, BE778156, and BG114611.
HODES86	512	1015304	1 - 1226	15 - 1240	AA063018, AA063458, BE780703, AI444822, AW517939, R02632, AA838190, AI580250, BE043307, AA776646, AC005899, AC007956, AL162615, AC005666, U95742, AC007216, AL138836, AC021876, U07563, AL034377, AC007308, AL021397, AL133448, AC007226, U91323, AC022073, AC006958, AC005529, AC011452, AL121929, AC010422, AP000033, AP000269, AL353807, AC003029, AL357752, AL450226, AP000103, AL133246, AL137039, AC003043, AC004644, AC004655, AC005399, AL050307, AB023049, AC002455, AC005500, U68030, AL031295, U95739, AC005324, AL450224, AC005015, AP001670, AL121675, AC004812, AC010150, AC006312, AC005594, AC004000, AC003070, AL032821, AC006254, AC004021, AC012558, AC008753, AC002470, AC002565, AL118506, AL354864, AL049840, AC008264, AC011495, and AA069510.
HOPJU57	513	1015324	1 - 1631	15 - 1645	AI801386, AI130729, AI951354, AI346419, AA974428, AI143115, AW162717, AI300949, AI148649, BF569612, AW054866, BF570440, AI206813, AI185787, BE615293, BE410344, AI951681, BF569961, BF685656, AI951257, AI189212, AI203857, AI884988, BE735464, AI268318, N30165, AA724367, AI340361, AW161821, BE388759, AA176575, BE294378, AW083817, AI332853, AI962867, AW148547, AA846546, AW516896, BG036497, BF685742, AW664467, AI097222, AW263822, BE733969, AI193863, AW085571, AW029466, BE877593, AA903789, AV721231, BF058882, AI200195, BE736206, AA719226, AI186165, AI185135, BF569699, AA180753, BF337640, AA721964, AI921807, AA595181, AA718926, AI140283, AI476531, AA719628, BF671968, AI093516, AI130702, AW874672, BE540302, BE314325, AA744704, AA836082, AA708878, AI612744, AI093408, AI139691, BF125815, BE901001, AI127942, AW157808, BE512823, AA639777, AI141125, W84441, AI074425, AI126845, AI148609, AA993729, AI027734, AI283187, AI148639, AW514401, AW960583, AW151167, AI088686, AA740789, AW613465, AA411261, AA707918, BF341253, BF337384, BE794317, W74453, BF342200, AA503552, AA225290, AA663414, AI985822, AA521379, BF968286, AA479563, AA778259, BF791194, AI879480, AI088256, AA757493, BF675006, AI041962, AI161406, W80350, BF973456, AA411186, F30500, AI143021, AA758705, AI970716, AI190498, AI355378, AI459406, AA062856, N20564, W52133, AI139997, W78166, W45702, BE934387, W60579, AI192165, AA176922, AV748277, BF673324, AA846717, AA651723, AA708138, H18117, W19268, BE796730, AA628056, AI888013, AI074834, AA577396, AI360683, AA393221, H20010, AA180945, AA632093, N35390,

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HVCAC71	514	101534 3	1 - 2211	15 - 2225	AL531715, AL524911, AL538331, AL513967, AL513968, AL521532, AL535009, AL522609, AU131245, BG033342, BE732861, AU123775, AU123828, BE512639, BE271204, BE270981, AI929349, BE901163, BE791770, BG031293, AV759759, BE019767, AU132291, BG034493, BF982477, BE299703, BE906310, BE788844, BE536530, BF980442, AU129887, BG026557, BE281025, BG257133, AW966738, BE878567, BF038336, BF967326, BE312843, BE559997, BG250373, BE278410, AU123662, AV685929, BF701310, AW163400, AA885286, BE731743, BE278525, BE538100, BE560136, BE777712, BE260324, BE882710, AU135115, AW440395, AI290358, BE869232, AU127084, BG035037, AW835061, BG171590, AI806103, BE783330, BF216041, BF028268, AL048517, BG168585, BE869959, BF211634, BF309468, AI572966, BF217684, BE569115, BF130434, BF725661, BF976905, AA306785, AA652324, AA743442, BF571852, AI689767, BE777927, AI003312, BF131121, AL521531, AL522608, AI040166, AI744792, AL538330, BF977349, BG258031, AI493354, AI431952, AL157595, BE974206, BE466004, AI139721, AI188584, AA503712, AA450240, AA861312, BE549795, AI139594, N90748, AA436633, AA165115, AL535008, AA181105, BE855625, AA948158, AW294485, BE536025, BE267993, BF211208, W07594, W70169, AW419332, BE245183, AI360697, AA419100, AI831987, BE773290, AV650249, AV650684, AA961990, N66078, AV650578, AV650246, AA234056, AV650773, AV650519, AA317420, H43456, BF934864, H79111, AA732606, BE241621, AA210764, BF447411, R59256, AA494115, AA376989, AV657836, AV650338, T85952, T29861, AA251969, AA079805, AI628072, N90844, W94361, AA129527, AA026911, AA232668, AI695838, AA337805, AI126527, W70111, AW950187, AI474226, D54979, AA581060, AA453859, F02411, D52775, F06140, AW591856, BF248214, T84801, AA356231, F08428, D54566, AA627894, AI918502, AA131257, AI744927, D53885, AA079631, AI469209, AI589005, AI874218, AI359248, BE464374, AA095541, AA828719,

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HSXCO55	515	101536 0	1 - 2745	15 - 2759		AL527889, AL527888, BF343138, AL525819, BE781680, BG115556, BE732112, AL530486, AU122091, BE884555, AW249027, BE887877, AA702154, BE791388, AA393120, AA195059, AW187982, AA195007, BE787037, BF887726, AA070569, BF881875, BF763234, AW379952, W27989, AA463417, AA463415, D58463, R43806, BE729116, AW379954, R13030, AW000977, BF026502, AW062942, AI334193, BF026989, T66403, AA345992, BE728080, Z44042, BF929103, AA463416, AW848503, AL119081, BF995780, AI886057, BF508517, R97564, BF096090, AA011352, W01495, H52292, AW175839, F34844, AW611799, AV749885, AI872514, AI022690, AA703171, T88769, AA613181, AW976173, W67739, AA412730, T75524, BF090941, BF725485, T33712, AW957599, AW954617, BF096089, AW294156, AI902810, AI902811, AI902809, R83640, F06662, BE832422, R19646, T75487, BF763254, AI703131, BE551051, AV720683, AK022332, and AL021918.
HLWDB78	516	101543 0	1 - 673	15 - 687		BF796831, BF210218, BF701279, AA287742, BF541219, BF666412, AU128625, AU126697, BE545375, AA641789, T79066, R09452, BF351826, AI765200, AW998878, AW001630, R24433, AA278916, BF091528, AK001322, and AK022939.
HPCQU04	517	101556 3	1 - 2931	15 - 2945		BE900483, BE900430, BE793781, BE798566, AI188793, BF792027, BG259644, AW968896, AW005670, BE727050, AU132150, BE903813, AV717509, BE794911, BF440058, BE397846, BG112908, BF312588, BF337644, BG169372, AU117650, BE885591, AU136686, BF344095, AI948456, AW007242, AW974579, AW512338, BE899401, BG258649, BF971664, BF204385, AI824036, BF029478, AW733016, BE616290, AW512086, BG166646, BF305249, BE292944, BF337814, BF205251, AI680132, AW467417, BE275029, BF666066, BE265405, AI201616, BG113759, AI858016, BF666327, BE278101, AI862344, AI768091, AI870673, BF444957, BG180941, BF665980, BF693760, BF438522, AA411615, AW574525, BE748032, BF206162, BG056483, AV756764, BF667931, AA613845, BE927946, BF305222, BF037517, AI174529, AI880678, AI017414, AI688226, AI419240, AW072354, BF220122, BF306174, AW245803, BE894643, AA505693, BF686381, AI349534, BE327569, BE280363, AI629015, AI097281, BF312243, AA046475, BE280085, AI096462, AA205538, AA830698, BG256671, BE617374, AA577517, AA827418, BG110031, AA988140, AI806869, AW401445, AW069828, BF856214, BF849224, AI002518, BF204740, BF309846, BE889784, BE262854, BF968028, AI085160, BF306020, BE298752, AI306461, AI088751, BF683516, AA488767, BG256384,

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HDPAT52	518	1015574	1 - 1374	15 - 1388	AL046886, BE279307, BE019568, BE391135, AA664125, BG177319, BE384305, BE390284, AW501171, BE889171, BE273776, AW499614, AW500833, BF346622, BE410770, AI371317, AA676873, AI434698, AV703394, BF922390, AA807225, AA721751, AI536606, AA760945, BE163519, AW976065, AI913150, AW747905, BF994170, T90581, BF755836, BF904131, BF084780, BE389227, BG108346, BF828643, AA152296, BG009400, BE778885, D61199, AI378039, BE075569, BF308243, AF056191, AC007050, AC004033, U80745, AL031670, AC005500, AR009990, and AF223678.
HAOSL81	519	1015620	1 - 2007	15 - 2021	AL521031, AL519782, AL537771, AL532982, BF508854, AL519743, AW957179, BF969852, BE795625, AL526699, BF340693, BE792891, BF238333, BG033672, BG029834, BG104854, BE883832, BE260201, AL521030, BE778826, BE313919, BF115935, BE260258, BE313721,

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HMWIU46	520	101581 4	1 - 1569	15 - 1583	AL535079, AL518148, AL521450, AL517132, AL531229, AL535080, AI040012, AL531230, AI762499, AL524071, BE741293, AL517133, BF027114, AL524070, AI279899, AI246620, BF026440, AI951458, BE746830, BF976082, BE874967, BF975129, BG120387, BE742636, AL518149, BF346931, BE798497, BF971335, BG028042, AL531911, AL536547, BE890981, BF309279, BE394154, BE299905, BE797408, BF237487, BF341190, BE899557, AL531910, AU123377, AI056329, BE886583, BF316766, AW071958, BF794107, BE378387, BF305550, BE304342, BE736150, BG035867, AL521390, BE871118, BE295405, BG252892, BE263295, BF026152, BE900137, BE313624, AL518057, BE866940, BF310604, BE727963, BE741384, BE263729, BG030172, BE269686, BE275888, BF683861, BE263357, BF685533, BE294784, BG036176, AI963529, BE796966, BE746010, BF306510, BE736227, BE891078, AW245424, BE410804, BF686254, AI760877, BG120454, AL521451, BE295095, BG256264, AW391889, BF304851, BE872207, BE879428, BF689615, BE858376, BF973214, AI097074, BG179080, AA449946, BF312801, AA576427, AL138372, BE304566, AW006324, AW009639,

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HISDH58	524	101674 0	1 - 1666	15 - 1680	BF439940, AI857437, AI278048, AI857436, AA507045, AW273440, BF527162, AA493364, AW297803, AI292326, R47896, AI364487, N66632, AI394536, N58844, BE147471, AI361304, AW594191, AA347485, AA357233, N80769, AI374919, AA357422, H08044, R47895, AW189621, BF839616, AW439143, AA887910, AI591191, AI279880, AI280275, AW594635, W65494, AI797532, H07938, BE048179, W65483, AI123607, BF955980, BE149297, AA347486, AK024697, and AF060570.

HSPSB62	525	1016768	1 - 1109	15 - 1123

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HE2FR37	526	1016939	1 - 723	15 - 737	BF949789, AA488860, AA319438, BF679533, AW118663, BG251769, AI911406, AU157678, AW502897, AC005495, AK024359, AB020629, AC005922, and AF119885.
HBJHU33	527	1017051	1 - 1625	15 - 1639	AL514228, BE731218, AL529655, AL529654, BE797337, AL514227, BE794724, BG110127, BF966631, BE893282, BE742915, BE890123, AW953655, AL528742, AU133581, BE619851, BE881083, AV705155, BE545070, BE908044, BE280723, BE866981, BE905326, BE315420, BG250751, AW361850, BG033740, AW408348, BF966374, AI133679, BE536852, BF694020, BG107184, BG123009, AV646950, AW863803, AW574744, BE536691, BE535711, AW361878, AA205799, BF033183, BE855740, AV752620, AW361703, BE619538, AW235125, BE779606, AV653849, AI953870, AV650365, N51687, AI679909, AI683840, AI860985, AI935673, BF732945, AW361713, AW149707, AI690828, AI613283, AI458820, BF947707, AW293561, BF674450, AA486511, AU154842, AI954922, AI313137, BF986327, AI673750, AI679402, AA424014, AV718741, AA725579, AA099053, BE395738, BE222658,

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HCOQZ88	528	101722 7	1 - 2468	15 - 2482	BF528706, BF511685, AW009394, BG105519, BG254081, AW960390, BF525928, AW007097, AW188653, AA621896, AU158667, AI308853, BF691095, BE907379, BG023998, AA024539, AW629142, H92979, W68163, AW182327, BE501512, AI832718, AI823734, AI770031, BF215995, AA449738, AI096535, AI745277, AA863106, AI281067, AA584416, AU154308, BF086852, AA308212, AI359520, BF059115, W38383, AI139547, BG031495, AW956354, AA761360, AI751095, W73695, BE927188, AA918091, AI419956, AI799464, AW665559, W95446, AI309249, AA583148, AA428071, AA021101, BF083221, AI026784, AI539181, AI039026, AI378040, BE710102, AW072311, AA676645, BE464465, AA593067, AA039665, W79256, W73924, AI079839, AW269759, AI805856, AA922123, AI473815, AI291953, AI829735, AI056216, AW272430, W94907, AI206193, N59411, AA025309, AA427955, W31744, AA927514, H68449, AA705665, AI932529, W95397, AA833519, BF763329, AI911828, AI217371, AI276807, H68769, BF241187, AI699445, W26803, AI471303, H94817, AI679026, AW088135, AA431304, W28691, BE927265, AU152091, AI453671, W88572, AA448595, W04520, BF763314, N46969, BF940469, W60394, AI420105, H74186, AA913911, AA913681, AI799093, N34049, AA133712, BE774604, H94831,

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HNTSV21	529	101737 4	1 - 1245	15 - 1259	AL134400, AA654357, AI659394, AI686014, AW410038, AI093582, AA652206, AW273447, AU146982, AL514659, AI963016, AI042174, AW965846, AW574750, AA654359, AA703770, AL517118, BE542873, AA182023, AI818522, AW072960, AA884895, AI077955, AA209362, AL515439, AW887824, BE539538, AU154982, N52207, AW157715, AA187876, BF000792, AU160449, AI915409, AA854654, AA934909, AA887240, AU159619, T57068, BE299580, AL518518, BF035823, AU158972, AU147868, AA464944, AA651945, AA148257, AA828521, AA190869, AA600031, AI088602, AU146486, AI245918, AA515504, W68695, AI003584, BF848727, BE299486, AU151912, AA932098, W68788, AA810464, AA831254, AA204836, AI073864, BF062816, AA630734, W37334, W72396, AA877763, AI239507, T57701, BF368824, AW519295, N93945, H28712, AI933713, BE617824, AI139316, AI299318, AL538396, AA909936, BG261335, AA806474, BF154399, AA169168, AA622934, W37369, AA876537, H39737, AL516437, W37117, BF764209, AL517155, AA541371, W65445, BF803857, W65444, H64967, C75187, R42343, AI620320, AW013842, W02224, C17924, W37370, BF764242, AI567004, BG106798, AW182900, BE618766, H66514, T06029, C18528, BF447193, H26685, BE645007, AA148256, BF812783, BF059296, AA709429, BE877546, BF958849, M78962, AA669602, AW581222, BE882709, N94420, AA357908, W26586, BF913671, F18903, T85737, BE858416, N69743, AV750626, AV736810, C17428, AI701304, BE619606, AI675840, AA486988, R11416, W40444, BF032212, AA557475, D53287, BF378126, AA486987, D58716, AW572367, C18873, F29285, AW673620, AI151194, AW983548, BG057603, BF795208, C01858, BF957266, AI475992, D79148, AA565388, AI720256, AV752041, BE181609, AI299319, AW057940, C18872, BE700845, AI049861, BF941688, AA968944, AA844560, BG105512, AA010945, BE717982, BF958883, AW513179,

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HNORH33	530	101746 1	1 - 2630	15 - 2644	AU118050, AU124650, AI804495, AL515217, BG254700, BF793291, AU139800, BF221530, BE614349, AU137694, AI435930, AI635319, AI927302, BG036151, BE780429, BE883539, BE783242, AI802380, BE222029, BF670327, BF035253, AW189345, BF690809, BF701218, AW138746, AW571851, AV758758, AW058381, AI859728, BF832574, BF832584, AW075704, AI755119, AA418590, BF981254, BF793595, AI984163, AU151135, BE780049, BF114722, AI961692, AA452161, BE779478, AU149020, AA418574, BF103811, AI004693, AU153522, AI351372, AW500112, AW261890, AW410234, AW136841, AI634166, AI631474, AA827216, AU128765, AA452392, BE966378, AU153938, BE349597, AI671386, AI380332, AI739557, BG248885, AL047192, AI378011, AI094228, AA621081, W39674, AA993180, AI244135, AA447738, AA707268, AI568172, AA448963, BF812945, W27396, AW139700, AW341254, AU156536, AI610449, AA680213, AV692709, AA074826, BE613637, BF379914, AA926753, AW369696, AA455981, H41985, AW902483, T65313, AI375902, AI290502, W27884, W44815, AI932816, AW902476, F09884, AA903638, AA112140, AW902481, AW902478, AL515218, AW955309, AW953636, AW902479, BE644837, AI638081, AW770216, AW902461, R24937, AW902455, AW235766, AW006582, AW902734, H66548, BF094361, BF239823, AW902736, AW902737, AW902730, R52606, BF379905, AW902720, AI522293, AW902469, AW902729, AA453670, AI581037, AA215671, F06886, AW902703, F06870, AA354203, F12257, BF379886, AW902732, W23553, C17550, AA449690, AW467583, AI694910, AA732285, BG252934, AW902470, BF001525, AA215779, F06869, AI872765, T66073, R52549, D78825, AA188898, AW063992, R45200, C03668, H66132, BF930789, AV738729, AI829792, N55752, AW902721, BG171769, AU138715, AW015422, AW198067, AA355665, BE929397, AA235264, AI910343, AA618016, AL121142, BE391223, BG120678, BE720589, BE939651, AI093996, AA358989, BE384185, BE882107, AA306135, BE408532, BF904404, BF376408, BG026722, AI904692, AU148473, AW385823, BF326100, BF085286, BG176691, AL036570, AW770803, AV731531, AA639867, BF000181, BF741199, AI982808, BE389430, BF957940, BE388275, N44960, AI193855, AJ132637, AF070656, AF090430, AK001259, AL162272, AJ295622, AC010518, AJ295621, AP000535, AP000536, AJ295618, AJ295620, and AJ295619.
HUFEF35	531	101756 5	1 - 3361	15 - 3375	AU125622, AU124809, AU119197, AU120605, AU131784, AU130566, AU125444, BE796658, AU139843, AL533184, AI582238, AU135468, AU124323, AU125845, AU125084, AU124685, AU118785, AU124233, AU135742, BE898995, BE899194, AU137120, BE741762, AU138659, AU138317, BE747802, BE747369, BE613292, AU138431, AU139369, AU139849, AU137367, BE796097, BE869682, AW074187, AU133161, BE741675, AA669462, AA886707, BG250343, BE621596, AU134160, AU136435, BG250404, BG170946, AU117879, AU136553, AU139661, AU134907, AU133516, BF343126, AU136570, AU127766, AU128322, AI917911,

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HJPCG39	532	101769 4	1 - 716	15 - 730		BF568812, AL526088, BF569186, BG027811, AI742518, W63632, AA846266, AI635798, BF435746, AI742228, AI452971, AI288946, AW189571, AI025026, AA446594, AI654457,

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HPRAJ96	535	101782 5	1 - 1238	15 - 1252	BE905358, AV704795, AI750172, AW068611, BE275273, AU150541, BG111601, BE907556, AA314655, AA176302, AI673815, AI991201, AA706312, AA910340, W68176, BE874534, AA043554, N36982, AV722422, AA234137, AW631333, AI051300, AW664014, AI473768, AI523193, AI797203, AW270058, AW949364, BF875208, AW874379, AI077685, AI890060, AA576776, AI735321, AU146371, AI922768, AU145876, BF667951, N44750, AA843430, AA022580, AV753473, AU147275, AA494539, N31677, AI887582, AA772320, W67717, AA009465, BF830648, AI218399, AA928339, AI128162, AA316991, AI075400, AA776984, AI719508, AI087005, C75550, AI520708, AA632372, AA187398, N59428, AA031548, AA912502, AA747520, BE219519, AW275298, AW275308, AI668989, H97855, N46294, AI376800, AA909487, AI040247, W46856, AA009697, BF476649, BF955428, AA194652, N24190, N24359, N42145, AA035181, AA923004, AA630164, N40074, AA765791, AL513707, AA029219, N33370, AU146814, AA482178, BF875210, AA836987, AU146354, N26844, AW801293, W00475, AA410935, AA970966, AA022562, AA035182, AA932392, W19925, AI266391, AV655435, BE439521, BF110210, AI752294, AW801347, R87786, AW801388, AW801382, AA058722, AA973369, R91664, AI888400, AA453207, AI524359, D54941, AI280430, BE003167, AA953285, AA705642, W19675, AW801535, H97865, H68256, AW022308, AA236216, AI079362, AI826658, AW020707, BF875250, BF875302, BF112188, AW801398, AA343287, H54770, AW801391, BE828307, AA057277, D58120, AA627764, C14590, AI025863, R94692, BF092425, AI829247, AW801528, AI524357, N91270, AA194759, BF358818, AI289845, AI140145, AI833196, AV701833, N99932, AA532563, H82377, BG120963, AW801401, AI183814, AW801387, R94774, AV738989, AA767636, N92271, N89998, AI886880, AA320152, H04129, AW974164, AW974165, AA988132, AW801384, R67002, BF916552, AA327353, N31704, AI290370, D52922, AA582352, H60825, AV743184, N33146, BE568925, AA541773, H60846, AV735611, AA701997, T90678, H60932, AV736832, T91238, N33260, H68257, AI205605, T90234, AA376145, AA250755, AA343068, D58117, D58626, AA029218, AW084289, AI554953,

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HMVDD81	537	101808 0	1 - 1431	15 - 1445	AI188279, BF982051, AW968539, BF112083, BE540598, W07118, AU123076, AA843407, BF574921, AI097335, AI201880, AI742837, AI539345, AI142307, AA570035, AI391562, AV757431, BE669685, BE958108, AA443227, AI367431, AI148021, AA578894, AA811212, AA255682, AA262594, BF475794, AI085416, AI819361, AA493141, AV757735, AV758388, AI148678, AI634525, AA443189, AI244745, AI668949, BF986084, AA527636, AA327805, T61116, BE301362, AI093951, AA465621, N77955, AA455241, T48329, BE183133, BE535556, AW732888, BE567198, AI769272, AI783690, BF131073, AI825568, AV738966, BG031168, AA129447, AW166794, AA282430, BF154836, AI468825, AA770313, T48328, AI474745, AA133846, AI956092, AI540687, N56553, AA096262, T61230, AA095499, AA089548, AW028104, AX048069, AF161477, AL031133, and AK001156.
HVVDH50	538	101822 6	1 - 2331	15 - 2345	AL521726, AL521996, AU123746, AL521995, AI609202, AU117000, BF974185, BF527407, AL048042, AI807456, AI951181, AI218661, AI799636, AU125082, AA554623, BG179365, BF975404, BF972419, BE733203, BF981524, BG179070, BG255004, BE868042, BF339051, BG036217, BG252081, BF339341, BG255011, BG178332, AI676184, BE621953, BG032707, AI635952, BG119610, BF971762, BG169134, BG250093, AW950204, AA907151, BE049474, BE272619, BG256163, AI905222, AI921071, AL138249, AI923213, AW732273, AI248348, BF127623, BF836270, BF698110, BE295255, AA565395, BF837991, BF345537, BE390767, AA654451, AI808854, AI337977, BE897041, BF525931, AA433931, BF724176, BG164450, AI025276, BF827230, AA430586, AA868692, AI055856, AI571884, AA434234, BE871447, BE785049, AI628309, AI193144, AI446480, AU122957, AI027512, AI890381, BF818545, AI338177, BE869320, AA203693, AA477057, AA434320, AI128008, AW401597, BG059688, AA948036, BE042674, AA772594, AA101156, AA311960, BE697381, AA074268, BF205674, AA503629, AA232550, BF339165, AU148816, BF805272, AA063610, BE925432, AW262115, AA476946, BE789123, AI752696, AW074189, BF971680, AI193067, BF769452, AW409987, AI910092, BE146092, AA148767, AW938642, AA405733, AV685539, AA218698, AA152261, AI139613, AI612782, AA402501, AW104644, AA102669, AI309042, BE870473, AW272879, AW263843, AI609066, BF893081, AI720733, N80732, BF209925, AI752697, F37360, AA586858, R53601, AU143943, BE621441, N99159, AA418836, AW960530, AA515096, N94377, W60430, BE614163, AA150287, BE967097, BG026184, W52952, AW001267, AW402003, H24950, AW874376, N23886, BE697359, AA418981, H18111, AW518137, AA292501, AW080655, AA358993, AA150223, H25769, AA310084, W89085, AA135040,

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HNNBT57	539	101824 3	1 - 388	15 - 402	BE383564, BE397201, BE270063, BE513540, BE409336, BE047639, AW732993, AW406595, BE397845, AW405264, BE386216, BE396554, BE390079, BE410519, BG024694, BG104428, BF975277, BG106009, BE387960, BE397165, BF664125, BF663807, AW405242, BE398026, AA280941, AL521138, BE793757, BF237876, AW407230, AW604723, AW858525, AW858526, AW392670, U46347, BF873833, AW971745, AL119439, AL119484, AL043003, AW804686, AL119444, AW363220, AW384394, AW861889, AW858455, U46351, BE695785, AW861944, AL119457, AL119319, AW604726, AL119324, U46350, AL119391, BE705903, Z99396, BE705906, AW577135, AW372827, AL119497, AL119443, U46349, AL043147, AL134519, AL119363, AL119355, AL119483, AW877209, AL134530, BF868684, AL119522, AL134531, AL037205, AL119401, AL134132, AL134527, AL134528, BF868697, U46346, U46341, BF868687, BE705905, AL119341, AL119335, AW392669, AL119418, AL134533, AL119399, AL119396, AL042544, AL042542, AL134538, U46345, BE705904, AL119496, AW861954, AL042614, AL043019, AL042989, AL042450, AL042984, AL042965, AL042975, AL043029, AI142134, AL042551, AL119464, AC015651, AX046339, AX046374, AX046338, AJ279014, AB026436, AJ251859, AX030435, AR054110, AR066494, AR060234, AX046357, A81671, and AR069079.
HCONJ11	540	101845 9	1 - 2009	15 - 2023	AL522559, AL522558, AW969064, BG253865, BG030600, BE889708, BG027819, BG118961, AV698953, BF224259, AI638156, AI290803, BF446299, AI419082, AW966671, BE925770, AW966263, Z78358, AA070060, AV662322, AI951098, AI808829, AI401261, AI612769, N22328, AA456113, AW205713, AA455619, AW195832, AW237640, AI275880, BF976106, AA504499, AA180297, AW966854, BF346197, AI569407, AA235048, AI687931, AI927749, AV753340, AA504579, AA215415, AI401397, T93269, AV712384, BE547557, AI862207, AA180296, AW296514, AW628794, BE874202, AW661779, AI679475, AA884581, AV706547, AA065264, H40558, N23824, AA065265, AI630385, AV696675, AI240949, H18331, AW074627, AA354465, AI284362, BF083548, AW237693, T91668, H05112,

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HCQAW68	541	101850 1	1 - 1639	15 - 1653	AW964813, AW043579, AW606602, BF196135, AW606592, AA808598, BF996827, AW173026, AI417159, AI089360, AI379044, AI027938, AA479468, AI521274, AV706893, AL524145, BF446349, AA470626, AA847893, BF112090, AA418271, AI950883, W31503, AI741193, AI333775, N49409, AA009947, AA456887, AL524146, BF221648, BF903968, AA505961, AW183055, H63962, AI262232, AA778546, AA478576, AA885985, AI972464, H63689, AW193647, AI468599, AI703182, BE090091, AA255751, AW969281, AW292700, AA173415, AA173505, R94806, N49499, W94077, AI678423, D30922, BF515916, W94078, AA417796, BE261235, R94723, AW514056, D31568, AW807806, AA478711, AA335529, AI004158, N87822, N47844, H94985, AV689516, AW614654, AK000010, and AC006557.
HVVCY25	542	101877 2	1 - 1399	15 - 1413	BG023883, AL516949, BF347806, AL516883, AL518952, AI831226, AI809120, AI828009, AI951751, AI890506, BE784419, AI983622, AI873523, BE536902, AW195804, BF929565, AI758765, BF892881, AW082032, AV722018, AV721642, BE873168, AW673510, AW966492, AI680233, BE622697, AW512963, AW151053, AW575070, AW731624, BE301818, AW770878, BF940658, AW594313, BE042515, AW514330, AW873970, BF892879, AI018196, BG257923, AA504272, AI934931, AA285329, AI754812, AI352152, AA554954, AI858723, BF347861, AA599595, AW305201, AI201775, AA631300, AW088804, AI472788, AW630681, BE465256, BG254495, AW628145, AI370914, AI055877, AA504444, BG150272, AI860093, AW966486, AA244120, AW051543, AI984410, AI968419, BG009102, AA995868, BF448155, BG231874, AW590016, AW069094, AW341761, AA807620, W60136, AI912098, AI825834, AA115402, AI693788, AI660028, AI962577, AI239601, BF476376, BE618915, AI935466, AI824532, AI961824, AA158486, AI351095, BG057236, BF852585, AI280594, BG248352, AA714530, AA504208, W95488, AA182645, AW512106, AA244119, BF593733, AA158982, AW085867, BG056998, AI768569, BG056799, AI160338, AW151479, AA983670, BG027888, AW170312, AI927318, BG029078, BF764366, H67061, AA888470, AA693357, BF107253, AW241692, BF848473, BF765539, N73591, AI968560, H68143, AI969794, BE618251, AI950776, T28359, AW197568, AW196129, AV746683, AW370116, AI950669, AA159041, N90556, AA302337, AA333143, W95526, BE265830, R42567, BE867690, BE247468, F36408, BE698776, BF815729, AI749001, W20202, AA332441, AI749534, R18363, AW589753, H91599, AW374904, BG023829, AA379738, BE243065,

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HCOMB65	543	1018802	1 - 4027		15 - 4041	BE740460, AW088016, BE795516, BE741250, BE742946, BG248537, BE562721, BF976367, BG121668, BE311756, BG117818, BG176719, BF971683, BF685870, BF972808, BG117074, BE908344, BG119376, BE728472, BE888904, BG110785, BF570226, BG034983, BG253593, BF688741, BE879728, BG256796, AA029567, BE875064, BE391274, BG119392, AA402384, BG110373, BG118822, BF984218, BE299113, BE620609, BE875708, BF973782, BE388213, BG252185, BG251566, BF794712, BE620071, BG036296, BE270159, BF689443, BE408003, BG035451, BG121064, BF667036, BF316777, BF817726, BE390204, BF817963, BG120527, BF304650, BF974632, BE544312, BE395825, BE874874, BG120501, BG250553, BF127555, BG027177, BG118824, BF310000, BE392265, BF851198, BF128351, BG118258, BF816693, BF816692, BF900981, BG035159, BF816704, BF815094, BG250304, BE870194, BG171394, BF816696, BF814061, BG104233, BG117337, BE280315, BF800057, BF851136, AI478770, BG123013, AW577005, BG252720, BF972118, AI888584, BE298833, N30600, BF851126, AW600806, BF132101, BF816623, BF977794, BE019166, AA523209, BE388456, BF734156, AA420536, AI419943, BE707247, BG119780, AA570479, AW248182, BE562396, AI581646, AW503956, BF436593, AW081108, BF317463, BE903006, AW192280, BF902189, BF808454, BF839762, BE313589, AI826560, AA687948, BG253651, AI806804, BF816699, AI499149, BF906521, BF851138, BF734138, BG109488, AI130911, AI024498, AW499777, AI582670, BE894236, AA666144, BF055360, AL121003, AI204036, BF815286, AI809282, BE542241, BF734042, AW007015, AA402632, AI672216, AA680036, BG120225, BF823652, BG167604, AI076254, AW080013, AI281296, AW500997, AI911117, AA284501, AW501036, AA287229, AW385694, BF815291, W58673, W58674, AA937214, AI983389, AA983405, BG104723, AI571267, AA041529, AW439167, AA862609, W35111, BF851117, BE273713, BF842548, AI827941, AA434519, BG250400, AA233683, BF803353, BE220516, BF514519, BE925572, BF872910, AA666146, AW168196, AI347853, W86679, AW236311, AI285142, BF569251, AW008451, AW069624, AA047713, BE876303, AI982845, BF154854, AW167011, BE327952, AA047680, BG251322, AA658253, AW341858, BF823650, BE876541, BG119413, T57882, H12952, AI924365, BF761208, AI281297, BF304658, BF968848, BE871181, BE728206, AI241191, AI952679, AW129022, BF932483, BF881775, AA622309, BF847955, BF857741, BF154861, BF823638, BE812431, BF819546, AI124004, AW576206, AI910209, AI803834, AW078725, BE810817, H21978, AI887432, BF823648, BF996328, AA604687, BG035824, AL121451, AW176073, BF806147, AA806169, AI686345, BE812423, AI125922, W44896, AW075755, Z82215, AK025393, AK025219, M31013, U87265, U31463, AB022023, M77812, AF139055, X69292, D10667, AR034576, AF020091, AF013570, AR034577, AF001548,

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HVCAH24	551	101974 9	1 - 592	15 - 606	AL532297, AV653346, BE782497, AV764595, AL537232, BF245697, AV714321, AI114567, BF213603, BF244698, AA536147, BE787762, AI830831, AV654419, AW972189, AW072030, BG028414, BE618411, AA318903, AA383707, BG108225, BG249004, N78477, BF246065, R60406, AA218559, AA904549, BE869225, AA318951, BF575136, AA319119, BF089616, AA371452, AW957400, W25827, AI525195, and AC002394.
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HPQAD21	553	101986 9	1 - 259	15 - 273	AA780355, AI582384, AA037231, AI962919, N52620, AI096763, AI560226, N23609, AA569965, AA069437, AW029605, AI678797, N53358, AA929063, N41010, N93863, AI342701, AI219156, AA149848, AW517179, AW341952, AI186941, AW028880, AI139309, AI150692, AA149803, AW778815, BG056965, AA621741, AI887136, AA480367, AI122849, AI264775, AI301094, AI858940, AW138433, AI475028, N51116, R43155, AI360750, N67604, AI805878, BF448017, BF436018, AI360714, AL036485, AW950411, AU145938, R56869, AI335713, AV709390, AL079879, H88637, R62368, AI358678, AI969128, AI682803, AI431806, AI927440, AI127867, BE045706, AI436746, AI457509, D25622, BE552098, AA969967, AI807004, AI873779, AI760974, AI498680, BE395341, AI092072, R41502, AI922485, BF195730, R26824, BE501550, BF115105, AI887907, BE966826, C21338, AI476678, R62367, AI338819, BF115838, AI701207, AA983931, AA745926, BE220071, BF340377, BF436189, AW150149, AA599581, AA328457, AA031945, AI095709, AI216130, BE379642, BF681640, AI871905, BE885672, AI695379, BG030823, BF814335, AW855497, AV682005, BG030364, BE881089, BG113188, AV727226, BE876033, BF037971, BF904189, BG180996, BF344705, BE885353, BG179633, BE905749, AI349614, AV682333, BF338723, BF924882, AL514359, BF032768, AI343112, BE826058, BF526020, AI349598, AW269097, BG032208, BG035511, AW149925, BF815196, AI433037, AV738730, BE885048, BF339043, BE887488, BG025770, AW302992, AI343059, AI565125, AI687291, AA974049, AI866510, BF826445, AW834325, BF699668, AI345251, BE783752, BG114104, AI313352, BF527014, AI349622, AI334452, BE910373, BG034550, BF816806, AW075207, AV682715, BE904178, BE172767, BF752353, BE072233, BE894455, BG036846, BE963286, BF036115, AV756150, AV682602, BG058039, BE877769, BG178809, AW858254, AV722478, AV738991, AW301300, BE908967, BF970853, AV755459, BF910810, BF850354, BG107576, BF673434,

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HOCMH14	556	1020007	1 - 2325	15 - 2339	BE797207, BE540510, BE293489, BE796238, BE797879, BE250132, BF311879, BE304911, BE293878, BE264951, AW028078, BE676650, BE305180, BG104408, BG118139, BG178095, BF035383, BE618621, BF237831, BE305140, BE293582, BE266684, BG036827, BF237476,

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HPDRZ03	557	1020130	1 - 2717	15 - 2731		BF795061, AW976162, AI336187, BE787905, AI566053, AA621555, BE379004, AI888132, BF449002, AI572793, AW953596, AV731560, BE464189, BF700608, AI057629, AV690932, AV731217, W20089, AW949930, BF185794, BF574471, BF790461, AI033649, AW978656, BF590535, AI015769, AW974203, AW580919, AU129798, AI187161, BE566880, BF672832, BF701487, AW379270, BG176763, AW379230, AW819999, BE565065, AI016847, AA554284, AI470063, BF028077, AI436699, AW974207, AI433764, AU151875, AW607577, BE866508, AV730208, AA496518, BF801714, BE565163, AI804118, AW386794, AI185250, AW611543, AW576189, BE787936, BF081587, AI864050, AW606295, AA757266, AI292179, BF698279, AA937967, AV728215, AW662851, AW770253, AA903450, AA828540, AW819747, AW664434, BE972481, AV748931, BE566589, AA086404, BE565629, BF669858, N59859, AI090008, AI018582, AA311481, BF369464, AA639411, AA235868, AL044818, BE565965, BF028240, AA194974, AI277479, AI830724, AW819990, AA884776, BE088303, BF825153, AV706348, AA352565, AA112766, AA994736, AA307919, AA195042, AV727714, T92794, AW577193, BE091282, BE698130, AA747705, AA305360, AW078967, AA130846, AI383982, T92816, AW974202, BF032637, AA332267, AW768891, BE840891, N50876, AA385919, AA206069, AL531278, AA236069, D20276, AA573456, AA454851, N90429, AA206242, AA206251, AW820081, BE091322, BE179477, AA204820, AA804901, AA207272, D45772, A20553, X55316, X59710, L06145, M55045, X59713, and M60617.
HOCPO73	558	1020180	1 - 3993	15 - 4007		AL517889, AL530663, AL530664, AL527010, AL519426, AL534226, AL517890, AL519425, AU118754, AW957151, AU125377, BE880294, AW467484, AI425003, AL532403, AI743711, BG261041, BF969175, AW269442, AW664040, BE467609, BE795175, AU129661, BG149333, AV722937, AI378839, BE503990, AA808061, BF511587, BE504725, BE550797, AV713026, BG111932, AI796765, BE779434, AW194726, AI141040, AU119219, AW675131, AW295030, AA907763, BE836425, AU149049, BF382219, AW090689, AA129297, AW970465, BG010166, AA808655, BF210690, AU145244, BE219006, AW090757, AU145617, AU144713, AU151742, AI040749, AA743502, AI376068, BF115269, BF432202, BF677542, BE673593, AI624081, AA449017, BF431936, AA425355, BE075299, AW275278, AA234143, AA400665, BE935814, BF594345, BG006317, BF211366, AW172960, AI082446, AA535366, AV687417, AA235178, AW103577, BE935750, AV686296, AA644064, AI393088, BE549680, AW104603, AA425560, BF433781, AI041616, BE672915, BF361973, AU118056, AA743516, AI767159, AW303946, W07337, AI536829, AA281366, AA400717, AW013799, AA583447, AA084316, AW169817, AA809281, R60645, AI246220, AV686665, AA129338, AV690633, AI374726, BF514173, AW078570, AW340767, AI620168, AA765027, AA456431, BE774508, AA196627, R60591, AA991773, T09201, AL038082, BE841488, AV688425,

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HNKDT10	559	102083 2	1 - 779	15 - 793	AL040968, BE614464, BF475583, BF570251, BG236016, BE645059, BE728283, AA876119, AL040878, AW853904, AI620201, AW272525, AW853891, AW604445, AI810630, AI624158, BE000415, AA662674, BE272442, AW295598, AV682528, AI139291, BE927219, AW361341, AA428869, AA643689, AA101504, AA506178, AW368592, AI628041, AI223312, AW272772, AW974131, AA126031, BE774624, BE543621, AA126626, AI635219, AI831145, AA223723, BG258104, AA166669, AI393334, AW368596, BF349670, BE272468, BE696054, AA609710, AA182573, AA125839, AA627552, AI520735, T70552, AW245101, AA588589, AA969727, AW361336, AI589990, AI654578, AW301938, H98122, AW613874, AI128760, H06511, BE774570, AA071351, AA569083, AA909871, AW173734, AA653217, AA436546, N25030, AW978146, BE774538, AW074868, AW608903, AW518612, AW390796, AI308036, R56868, H84055, H29320, AW292509, AW338571, AA281089, AV696543, AA813942, AI682762, AW608894, T90829, BE540699, AW028456, BF829483, AI474847, AA706136, BE407767, BE147900, AI612136, AW853793, AI612151, AA969587, BE828101, R10267, AA366775, AA776935, AW753301, BF816887, AI741693, AI525912, AA715437, AI802376, AI571962, AW876607, BE002394, BF832529, AI610191, AI242268, AA436573, AI918613, BE465631, BF095123, BE537892, C00578, BE242302, AW386767, AW999658, H53724, R72151, BE748607, AI362560, AA730228, AW469483, AI886770, AW795176, BE842481, BF822760, BE008855, BE774516, AW600274, BE093399, AI963787, AW879423, BE768742, AW579391, AW579321, AW176549, AW579382, AW579341, and AF191018.
HWHGO25	560	102084 1	1 - 651	15 - 665	AK025015, AL031280, AL049845, AF139813, AL135783, AL117337, AP000009, AL391384, AC004066, AC007383, AC007262, AP001429, AP000150, AC003025, AP001713, AC016601, AC020552, AC005578, D83253, AC024247, AC010358, AF205588, AC004228, AC034246, AL136170, AC006571, AL121977, AL157826, AL136314, AL031602, AC002045, AC008122, Z85996, AP000035, AP000031, AL136101, AC003013, AC005914, AC005330, AP000100, AL136981, AC003971, AL109952, AJ000673, AC005538, AL109825, AC005041, AC004980, AL162831, AC016816, AC006452, AL162390, AL157372, AB011166, AC020898, AL022313, AC011464, AL021937, AL161757, AL034420, AC006483, AC003982, AC083871, Z97988,

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HWMNE31	561	102085 2	1 - 1048	15 - 1062	AL523455, BF685619, BE396633, AL522875, BE727102, BE385361, BF971548, BE901324, BE251996, BF683401, BE727862, AW957925, BF972411, BE887273, BF063156, AV650861, BE348280, AI479252, AI471620, AW242495, AI138610, BF038793, AA307040, BF476579, AA631250, BG010494, BE327939, AW300589, BF348460, AI650780, AA126751, AW237339, BG008457, AW361221, BF949318, AA868535, BE704322, AW104774, AW853553, AW139397, BE252382, AI766554, BF803012, BF973574, BF805834, W22123, BE244245, BF986189, AW804846, BF996230, BE876641, AA131115, BE176635, BF089058, BG015073, BF808543, BF876184, BF743463, BE882668, BF876140, BE779075, BG008749, BG004714, AA159254, AL523454, AA159246, AI889092, AA054682, AA159444, BG029940, BE003218, BG109109, and AF083384.
HUSYJ75	562	102087 8	1 - 829	15 - 843	BE616886, BE737370, BE313836, BE616411, BF314407, BF309777, BF683527, BG034665, BE259399, BF685748, BE799408, BF683989, BE313841, BF684679, BG256204, BF305186, BF684326, BF339386, BG120598, BF683765, BF304139, BG031413, BF205559, BF203380,

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HSDFS07	563	1020904	1 - 1051	15 - 1065	AV660563, W28683, H06169, U46296, BF791236, AI816502, H16434, W65439, AW901775, N44987, AL035427, and AB007903.
HCOPC09	564	1021208	1 - 668	15 - 682	BE877222, BE563229, BE906536, AW006817, AI660818, AI309831, AA075143, AA683587, BE273512, AW004931, N32191, N32189, AW189983, AA195167, AU155716, AI457910, AI128868, AW802561, AA505434, AW802439, AW802607, AW305090, AI190254, AA642293, AI933386, AI708906, AW802602, AW802604, AA569431, AA074407, AI369322, AW802589, AV656952, H26602, AV656964, BE003740, AW802600, AI017411, AA480199, F29822, BF111575, AI623115, AI886671, AI984344, AA194955, AA074308, T53523, C02021,

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HVVBT22	565	1021323	1 - 1687	15 - 1701	AU117422, AL514582, AL532153, AL535182, AU119503, AL515348, AL518412, AU142403, AU136064, AU117566, AU125032, AU142609, AU120990, AU125166, AU120250, AU122228, AU120208, AU131839, AU125690, AU120809, AU120431, AU120496, AU121653, AU130969, AU120289, AU141529, AU117312, AU122759, BE731920, AU125858, AU136185, AU143171, AU124914, AU123314, BE748881, AU124640, AL537080, AU117082, BE747420, AU138101, AU143396, BE886071, AU134283, AU138420, AU130772, AU133610, AU134639, AU122001, AU137905, AU124552, AU134165, AU126330, AU120773, AU128599, BE019382, AU123242, BG033773, AU123244, AU128844, AU128812, AU122063, AU140131, BE898670, BE781312, AU126452, AI357396, AW161269, AV713949, AU134973, BE901129, BE257934, BE902602, AU128388, AW410254, AA173565, AU129219, AA885276, BE271870, BF195178, AU127412, BE271305, BF308186, BE543295, BF796416, BE883484, AU134938, BE874501, AA810505, BE280671, BE535185, BE791948, AA460919, AW515392, BG231654, AV760243, BE563561, BE871731, BE514155, AA306727, AW160602, AW614922, AW328678, AI751440, BE267332, AL038056, BE262753, AW264678, BF035231, AA745986, BE874665, AU126313, BE795186, BG105962, BE779924, AU143282, BF919797, BF920391, BF919798, BF919736, BF919863, BF887577, AW410104, BF920023, AV760330, BF919859, BE277024, BF920401, BF919741, BF920393, BE728896, BF892628, BG250877, AA643578, BF919800, BF919739, BF919855, AA136603, AV760748, BF920402, BE895069, BE792450, AA461222, BE781751, AA905219, BF306371, AV760722, AA173850, BF305355, AW073698, AA602419, BE049587, BF305270, AA863330, BE782876, BE242149, AA361044, BF919846, BF304408, BE787371, AA306612, BE313786, BE778186, AW976276, BE748292, BG035992, AV737626, AA826291, BF308278, BF970617, AW161764, BF025985, BE883883, AA173728, AW580945, BF965263, BG119870, AU125383, BE392807, AI751588, AA113339, AA214477, BG024481, AI160578, BE778007, BE781925, AV757089, AA374616, BE264518, BF670760, BE269160, AW797530, BF688054, BF920018, R42651, T41211, AA359827, BG033868, BE271463, BF349723, BF919791, BE085587, BF670517, BG110561, BE246601, R77057, T51111, BE222796, BF210615, D19665, AA749391, AI222227, AA746250, BE085637, W22802, BF681379, BF688133, AI659594, AA903199, BE710280, BE253002, AA084239, BF306478, BF892623, BG167309, BF032518, BE707092, BF576794, BF768008, AW166002, AA092065, AA333206, BE903624, BF768014, BE277196, BE085565, BE867589, BF475712, AW672890, BE890700, AA361776, T51019, BE071854, BE893757, BE934839, BE829205, BF211131, BF688803, AV733173, AW972818, L76159, Z23064, AR083785, AC004051, AL121573, AL034397, AJ237847, AJ237846, AF031568, U62105, AF146191, Z57492, AF074708, AF074707, A41579, AL133665, AL080139, AL389935, AJ012755, AL357195, AF124728, A77033, A77035, AK026541, A23327, AL389982, AF230496, AL133623, AR050959, X00474, AF116602,

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HAMFW66	566	1021327	1 - 2419	15 - 2433	AL526421, BF348345, AW960471, BF967738, BG029196, BE888136, AA521213, BG026624, AW269820, AL526380, AA935806, AI811094, BE544188, AW297814, AA530864, AW183088, N93208, AA190485, AI590925, AI580177, AA530872, BG166234, AI192467, AW675014, BG001657, AI770041, AI392640, N78499, AW613010, BF752886, AW082182, AA285173, AI031786, AI031914, AA828941, AA768225, AI921261, AA705598, N73658, AA189018, AA088228, AI081497, AA748426, AV722453, AV722710, AA812077, AV722812, AA825401, AV724527, AA729099, AI476037, AI797637, BF516236, AA181631, AW577499, BG261386, AA115700, H66289, AA190522, BE246170, R80280, BE247161, AA088373, AA826000, D44777, AA988049, AW449908, AA807271, AA829143, AI469173, AI474641, AA552196, AA961047, AA076472, AW183263, W38991, AW969186, AA328179, BE929231, Z30295, AI077532, AA076361, R66760, H57093, AA115701, R77473, AI541132, R31313, AA284026, BE813379, R76603, BE929288, R33300, AA190923, R31573, BF987396, AI824597, AA302351, H67718, AA639693, AW748613, R33149, R66399, AW613313, H57094, AA814297, R76604, AA329168, AI903265, AA091905, BE004643, AI472450, AA190924, F13607, BE926658, BF989794, AW577495, AA419387, BG105915, BE003461, AW440944, AF271070, AC016254, AF075704, and S77359.
HPMBW86	567	1021661	1 - 884	15 - 898	AA282852, BE909837, AA324267, AI272171, AA826428, BE617994, AV725733, BF950693, AF129756, AL132713, AP000504, and AJ245433.
HOFMK02	568	1021666	1 - 373	15 - 387	BG168646, BG168645, BG117025, BG253641, BG025417, BG258222, BG167818, BG164284, BE612896, BG252223, BE621811, BF345060, BE910738, BF798053, BE621893, BG123011, BF984992, BG117030, BF984267, BG031014, BG117026, BE621810, BG168644, BE614378, BG253645, AA362688, AA362690, AA362689, T29199, BE613101, AL044652, BF793870, AR080280, I66487, A94048, A94061, AR035224, A49045, AR071324, I09252, I09251, AX002278, I09270, I09268, I09269, I07209, I07249, AX042374, AX033488, AX033489, AX033490, AR068508, AR068510, AR067734, AR068509, A63954, AX042377, AR091571, AX033474, AX035427, AR089207, AR089206, A49701, AX035430, AX033486, AR089208, AX033487, AR089205, A29109, A32111, I66495, AR068550, A23373, AR068551, AX042373, I66494, AR085090, E01324, I08638, A94046, A94054, I58322, I58323, I66498, I66497, I66496, I66486, A27169, A27170, A39929, A83151, AR067731, AR067732, AR038307, AR038321, AR070554, I09267, AX030435, AR051528, AR051547, AX030436, AR051537, AR051524, AX042376, AX042375, and A42964.
HOUHK71	569	1021682	1 - 415	15 - 429	BG232144, AI078579, AI634879, AI206835, N32586, AI184760, AA992169, AI351746, N32600, AI830545, N62169, AI693942, AA602061, AW069038, AW768856, AA326452, AA811954, BF804385, AA862029, AW962235, F35674, AW664548, AI671077, AA297789,

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HCOOW23	570	102175 9	1 - 909	15 - 923	BE253921, AL536770, AL533198, AL534756, AV650088, AL529457, BE293315, AJ403132, AL534757, BG248619, AV759232, AL532630, BF515555, BF982726, BE392537, AW752338, BF337539, AL522277, BE252854, BF337870, BE888289, BE796085, AL522276, BE798216, AL536769, BE798556, AW820575, AL515572, AL532584, AL525226, BF342351, AI937797, AL529456, BE269295, AA853153, AA371767, BE296482, BF342746, BE794857, BF304289, AA322256, AL038180, BF204689, BE867391, BE737482, AA486356, AA359937, AL525271, BE925554, BE711533, BE548184, AA348677, AA344315, BF846052, AI878966, AX014299, AF158978, AF196969, AF220146, L08237, and AK000570.
HACMT02	571	102179 4	1 - 321	15 - 335	
HISDS67	572	102201 8	1 - 2308	15 - 2322	AL534825, BF966655, AL534826, BE297391, BF220011, BE245264, AW156875, BE791830, AL513756, AI288798, AI983649, AI983228, AU148467, BF194886, AI949855, AV751641, BE858463, BF530393, AU158916, BE670426, AU151009, AL537788, AI198922, AU141329, AI084858, AU130221, AA975273, AA826390, AW369907, BE467257, AI419391, BE467571, AA161209, AI369446, AU152769, AW474249, AI702643, AI085602, BG142258, AW471257, AW090631, W26589, AI085983, AI269061, AW079989, AW338324, AI934186, AI798753, AA772100, AW956493, AV654106, AI497580, BF890701, AV746621, BE696848, AU130902, BG056286, AU155631, AU141632, AI368950, AA702289, AV728848, AU133753, AI735233, BE832305, AU159447, AI042204, H45328, AU124643, BE327413, AI378413, BF367422, AI363351, BF940478, AW467982, AW150346, AI654974, BE612670, AA086226, R62990, AI090507, AU134777, AA112992, D61140, AI421781, AW052148, W32560, H15253, AI076859, AI436265, R63046, AA927548, AA757678, H13533, AI651723, BE672226, AW197530, AI367015, H12421, F34298, H45260, AI935399, R68712, AI671255, C15812, R43616, BF448890, BF477771, H12422, AI096595, W32679, AW411298, AW966063,

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HOVAA59	573	102203 7	1 - 2880		15 - 2894	BF663546, BE515265, BE271255, BF686472, BE271158, BE799923, BG250167, BG114802, BE560209, BE896965, BF983729, BE907113, BG113833, BE867974, BE312104, BF436337, BE267744, BE730335, BE267870, BG259130, BE780948, BF529227, AI678038, BE251580, AI302252, BE301829, AW006365, AW239255, BE889219, BE273260, AW293884, BE218473, AI912806, AW006355, BF058239, AA400151, AI346600, BF732881, BE560177, BE384861, AI703178, BF447926, AI684363, AI814411, AI243451, AA400177, AI458007, BF222427, BE513941, W44360, AA101019, AI479636, BF478032, AW078759, AI160522, BE797999, AA101020, AW296926, AA194366, AI288978, AI299323, AI378783, AI276087, AA399412, AW406211, AW614033, AW028776, AW402617, AW138677, AA308772, AA424970, BE219523, AW004676, AI014657, BF347470, N28719, AW247480, AI217469, AA194451, AW013943, AA582260, AI494169, AI287639, AA078843, AA459771, AA935341, AA962823, BF718676, AI568731, AW575260, BE241846, AW168461, AI609321, AW168460, AW501176, AA102492, N23054, AI270766, AW501163, H03116, AA052893, BE241450, BF061050, AI081881, AW088007, AI828294, AI473797, N79446, AA053066, AA155614, BE839053, AI910774, AA593294, W45713, AI859126, AW501340, AW075530, H25422, BE560824, R68175, H23671, Z25175, BE241715, BG059631, AI922153, BG056804, BE887176, AI333925, AI285233, AI222309, BE537653, AI358978, H12425, AA078842, AI018011, BF941218, AA296841, H25463, AI025963, AA292172, AA516434, H18375, AI909804, AA913370, BF740947, AI973056, AA644057, AI351425, AI540605, AI824426, T84848, AA972466, AW732545, AA495972, H52832, AI202261, AW001521, AW006790, R50745, H23627, AA985274, BF877647, W07816, AW380738, H52831, BF903465, R50289, AA515082, AA830254, BG056687, AI744667, AI808482, AA807117, AW403735, H44855, AA406283, BE241528, AW131676, W23579, AI383034, W35247, AI126158, AI868512, AI671272, BF115474, AW593817, BF841813, AI223169, AI473155, BF588530, Z28826, AW238907, BE560844, AA552350, AA580852, AI653221, AI917471, AI669976, AA033652, AA807814, BG013843, BF876270, H27900, AW166470, AA631984, BG010588, AI745340, AW751433, BE767176, H40656, BE767205, BF796402, AL039390, BF795712, BG252929, BG113493, BG029667, BF338002, BG167830, AI890907, BF971016, BG119543, BG113712, BF970425, BG163646, BF971261, AL046681, BF792736, BG180295, BF968504, BG108452, BG114865, BG111100, AI906578, BG179586, BG111590, BF968622, BG251851, BG165260,

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HOCPL72	574	1022059	1 - 2428	15 - 2442	AU132311, AU133843, AU123628, AU126989, BE270303, BE965853, BF104740, BE782152, AW967966, AV710700, BF979638, AI760361, BE866269, BF572988, BF977379, AA835886, AA282291, AW152499, AA232116, BE694283, AA282292, BE866003, H24091, BE694299, BE694274, AL036481, AA587771, BF590906, BE694256, BE694301, AL036074, AI738975, AI337371, AW138609, W01426, AW370876, AI085600, AA258395, BF691661, BE828089, AI654432, BF980280, AW370872, BF825914, BE711349, BE694242, AA808145, AI249475, Z28899, AI095789, AI888383, AI383951, BE694255, AI041993, AL036075, AW631216,

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HCOMM05	575	102208 2	1 - 1649		15 - 1663	BG250919, BG168448, BG119581, BE873125, BE873068, BG026155, AI681802, AA534542, AL044632, AV698020, AI912061, AI912050, AI298280, AI271683, AA587766, AA143726, AA565889, AI052230, AI983603, BF939524, AI369272, AA079779, AI148467, AI028441, AW747800, N93876, AI950520, BF511609, AW024410, AI933105, AW138648, AW579260, AI244430, AW605368, AA583571, AA436795, BF531044, AA158795, AA079751, AA595313, AA947417, R27340, AI373637, AW182724, AI244362, AI869920, AW381284, AI348932, AI991003, AI250467, AI335365, AI611516, AI252717, AW086414, AI252210, AI310178, AI252203, AI345138, AI308005, AI310659, AI250541, AI311180, AI250964, AW301779, AI348928, AW086115, BF840501, AI311179, AI250009, AI345868, AI305732, AI311504, AW303046, AI269522, AI254155, AI335130, AW301495, AI251162, AI862506, AI371584, AI311043, AI251045, AI335320, AI305978, AI590436, AI284537, AI310038, AW301422, AA158794, AI224292, AI252538, AI053635, AI862262, D31472, AW268255, AI685886, AI540612, BE043498, AW371409, W40369, BF718394, AW071370, AI886550, AW371414, BF765964, BF805100, AI955911, AI024888, AA143739, BE645943, AI254135, AW748697, AI246935, AW177721, T35070, BE743993, BF765681, BF030689, AW748701, C00345, BG223100, AW371416, AA902858, AW827228, AW369434, AA581215, AW663332, BF968085, AW117919, BF814541, BE966388, BE898902, AI932915, BF726237, BF753020, BF342070, AI554245, AW132056, BF342475, AI800433, N80094, AI358213, BF726183, AW088899, AI539153, BE048071, BF726504, BG168696, AI919107, BE964497, AI680457, BE047852, AI802833, AW020095, AA946741, AI698401, AL110306, AW118398, AI251830, AL041772, AI805769, AI929108, AI468872, AI680280, BE048157, BG116586, AW999049, AI251205, AI888621, BF343174, BE965192, BF970186, AL046356, AW195957, AW002342, AI889953, AI659795, AV714209, AI520809, AI569309, AW151785, AI498579, AI478123, AL119791, AI922901, AW198075, AW088134, AI432736, AI610645, BG058039, AI587606, AI699011, AI476109, BF341801, AI697324, AI335214, AV729451, AW081255, AI868831, AW073994, AI888944, BF344652, AW189415, AV757797, AI280670, AI590686, AI783861, AL119863, AI866608, AI886124, AI345746, AI680498, AI628217, AI802240, BE907440, BE543089, AL040241, BF895953, AI687065, AW827289, BF343172, AI469738, BE964700, BG029053, BG260037, AI805688, AI249877, BF970446, BE907624, AV728670, AI345677, BF982085, AI952920, BF814357, BE620444, AV756770, AI431909, AI633062, AW406745, AW505354, AI343059, AI376180, AW168031, BG105895, AI682743, AK025588, AK025824, AF119909, AL137526, I48978, AK000647, AL050138, AL080127, AL359583, AF217966, AX019230, AF078844, AF116688, A65341, AK025084, AK024538, AF130100, AL122098,

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HLYDC86	576	1022162	1 - 2970	15 - 2984	AI207830, BF980256, BG255565, BF527753, AI207808, BG117478, BE882223, BF032245, BG107961, BG028168, AA418445, W55859, AI927385, AI885195, BF207485, AW959654, AW974422, AW026019, AI634742, BE672190, W55860, BE467355, BF216890, AW368105, AW167206, AW938120, AW780348, AI890090, AA609091, BF061507, AW008797, AW471447, BE328742, BF438483, AA486828, BE539697, AI222822, AI922048, AA854525, AI139534, AW268992, AI082583, AI921872, AI689669, AI869021, AI198325, AA890469, BE546325, AA825182, AW166302, N53464, AA568725, AI273743, AA872908, AA565397, AW183155, AA187931, AA137123, AA188547, BE673258, AI420396, AA130271, AI424421,

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HTLEP21	577	102216 7	1 - 498	15 - 512	AA737807, BE396727, BF337404, BE514003, BE901238, BE902214, BE778641, BE560533, BF212227, AI950417, BF310368, AW296355, AI694694, BG113731, BE856560, AI341643, AW083848, AA448944, AW076055, AW772825, BF224446, AI341859, AA316241, AI950236, AW452665, AI796355, AI367080, AA582612, AW891296, AI338467, AW601444, T62771, AF081280, AF079325, AC010789, and AF267714.
HVCAS77	578	102231 3	1 - 1263	15 - 1277	AL521313, AL521314, BE747572, BE253933, BE790552, BE796103, BF976677, BE791415, BE792769, BE274394, BE796689, BF796503, BE794149, BE793203, BE794288, BE793965, BE782408, BE730602, AI659313, BG259406, BF309144, BE795024, AW005203, BE899367, BG180536, BG166395, BF973764, BF002015, AI768158, BE782309, AW005822, BE793448, BE263339, BG112962, BE783146, BE252166, AL520006, AW409697, BE275767, BE797479, BF348188, AI811508, AW409803, BE336617, AA662424, BE408619, BE045964, AA532741, BE798119, BE251277, BE546783, AI245935, AI829864, AA805144, BG121848, BE729203, AA836071, BE208381, BF526851, BG036461, AI422141, AI333291, BE293399, AW071219, AI186332, AA989165, AI075429, AI765526, AI199555, AW631134, AA775457, AI369339, N76112, AA310550, BE560339, AW081404, AI440080, AI097580, AA057723, BF215457, AI306438, AI984535, AA835895, AA261829, AI333784, AA504630, AA314685, AA506513, AI660313, AI369337, AA775467, AW672784, AW081409, AW245674, BE791842, AW404380, AA125833, AA857593, BF804330, BF348989, H43541, AA705660, AI336830, R38335, BE547114, AA732440, H43540, BG232104, BF594600, AA262477, AA639827, BF588468, AA917401, AA329694, AA450327, BF002621, W05602, AW605466, AA995637, AW406034, AA055082, AA249052, AI474964, AW575850, R39418, AW630350, AA502317, AI277110, AI468717, BF807015, AI380789, AA504727, AI474540, AA450328, BF807011,

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HOGCA79	579	102262 7	1 - 791	15 - 805		BG168184, AL520454, W26661, AW852195, BG025290, AV724937, BF507602, BF088108, W03095, AL137260, AB023164, AK024400, and AK025279.
HSKJP93	580	102266 3	1 - 902	15 - 916		AL529011, BG255347, BF690072, AL526898, BE619715, AL526862, AA225276, BE313356, AI038975, AI921710, AW008086, AI090281, AW069180, AI363208, BF589487, AI089610, AI347908, AW149792, BF438638, BF197170, AW169069, AI360030, BE962354, N20554, AA622048, BE645187, AI281033, AI078405, AI206446, AA234630, AI619944, BF677125, AA716397, W46238, AI363209, H57560, BF438307, AI076931, AI245901, AA232141, N50121, AA781638, AI339741, AI949284, AA587473, BF879123, AA417926, BE049614, AA039652, AA725052, AI088073, BE617041, AA873510, AI830299, AI674249, AI075714, BE301100, AI184096, BF060686, BF060708, AI143825, AI682736, AI371374, AI753946, AW517317, AA404562, Z41593, AW197868, AA039653, AI201064, AA226403, AA911964, AA936800, AA587227, AA180295, AI375376, AI472925, AI375208, AA633085, AI917575, AI796045, W46237, AA256621, AI276514, T35186, BE440014, AI022101, AA490686, AW753961, BE720795, AA490464, AW380609, AA907215, T23530, H69686, AW207363, BF088878, AI272710, BE814054, AA677846, AI887107, AI382910, AI340115, AW591579, T69837, AW883612, AI868215, AW800073, AA382930, BE931847, AA508694, BE763875, AW025790, T29949, BF917720, BE715584, AA709274, BE172905, AW578884, AI000438, T70170, Z39224, AI242350, AI242352, AA065234, BF037167, T32777, AA232682, AI362572, BF593504, AA559094, BE715507, AW591554, BF736794, AA747146, AA442426, AI498518, AA715001, AA064932, AW795338, AW795199, BE814103, AI869467, BE832738, BE832684, AW967343, AW879422, BF815725, and AL050022.
HAZAA64	581	102271 9	1 - 1012	15 - 1026		BG250151, BG030305, BE621879, BE877128, BG169415, BF315280, BG115047, BE313140, BG178675, BG250651, BE780849, BE621219, BE888948, BF984358, BE883171, AW955813, BG027461, BF978356, BG028391, BF978621, BF968789, BE313134, AV706213, BE261031, BG178287, BE407132, BF573272, BE265622, BE047800, BF111443, AI039662, AI432190, AI750580, AA181190, AI264676, BF700663, AI554856, AI373711, BF965142, AI151373, AA227851, AW248400, AI571831, AA904468, AW264035, AW263997, AA886963, AI217114, AI636464, AA902875, AW263443, AW246715, AI348664, AI660883, BE932685, AW057916, AI817324, AA464607, AI336179, AI080510, AW194208, AA035005, W73343, AA100458, AA989396, AA774506, AA100457, AA765035, BE932688, AA805569, AI400059, AA599048, AA749257, R60617, AA157856, AA570219, AI400073, AA826173, W73512,

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HSEBD72	582	102290 4	1 - 613	15 - 627	BG259688, BG256381, BG106089, BF540736, BF685406, BG258836, BF317099, BE885124, BF685000, BG119494, BG026412, BG169451, AA130162, BF338064, BF035082, BF794548, AW163397, BE887335, AW247610, AV762460, BE769830, BE769829, BF307824, BG256286, BF346899, BF035806, BE891041, BF668220, BE735421, BF346627, AV764510, BF686475, BE905176, BF965427, BE563345, AW404764, BG105558, BE292726, BE732009, BF674377, BE733090, BF978450, BF309938, BG260314, BF218394, BF699000, BE784528, BF879216, BG253332, BE907669, BG028162, W65380, AW939133, BG260576, AW406459, BG032966, BF879284, AA037254, BF669461, BG249709, BF344262, AV688291, BG025832, BG114919, BE790011, BE547194, AW605534, BF689211, BE275820, BE895300, BF794947, BE274641, AV761956, AV760279, BE617459, BF237719, BF769691, AA244342, AW802123, BE905962, BE795747, AA736559, AV660803, H19605, BF768800, AV761301, AI718292, AI801068, AV716780, BF829067, AI033692, W37563, AI805149, BF343157, BF374369, AW157339, N55921, AA308978, AW880508, BE747475, H49329, BF768932, BF738806, BE832841, AW161592, BF185152, AW796437, BE568100, AV694334, BF768790, AW057902, BE617906, BF360560, R62329, BE539858, AW665269, AV711201, R69210, BG254986, R66651, AW802172, AW881164, W38866, AV655875, AW802153, H87324, AW340407, R71144, AV688290, BF879276, BF214803, BF929293, R81889, BG120942, BE560575, AW802168, R53482, BF209485, H15764, AW802110, BF681137, AA375768, AW802147, BE077283, BF771934, H50061, BG171644, BG058508, H42936, BE077392, R48677, BE082886, AW407445, AA347144, AW802114, AW340164, R82676, D30956, T83271, D31446, AA405848, BF246844, AW583591, BE077328, AI377826, AA063466, AA371719, BF771933, AW794316, BE298232, BF376838, AA506331, AA062973, BF376632, AA374912, AA877781, AI245944, AI870352, AW361732, AA309983, AA507296, AA405806, BF770066, AW958497, BE908127, AI376668, AW080994, T86590, BF349383, AA654022, AA132472, BE694496, AI753821, AA843958, AW804272, AA502629, AW262017, AI871454, BE170840, N22675, AW902974, AI200846, AA968888, N92574, AI368783, AI023505, AW878956, AA508010, H96667, AI094436, AI222362, AW800153, AI818859, AA035095, AA844075, AW973531, BF806782, AW845333, BF807373, BF868465, AA401366, BF806177, BF806786,

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HDPYE27	583	102291 1	1 - 2457	15 - 2471	AL535627, AU117693, AU133608, AU119497, AL134742, AU133888, BG105714, AW025344, BF979860, AU133649, BE300443, AW612474, BF526063, AV717721, BG251688, AI658995, AW341214, BG170879, AI806196, BE544828, BF432471, BE869548, BF792621, AW867813, AU136996, AW471220, AI440474, BG260994, BF966796, AI969455, AV701778, AW149733, AI346272, BG166396, BF340507, AI765002, BE738221, AV662073, AV752780, BF694518, AV748898, BE549788, AI034259, BE738065, AV661976, BF671837, BE089819, BE795854, AV734070, BE005803, AV686490, AV686488, BE005795, N75091, AV662018, BE005664, BE895332, BE178956, BF242928, AI122783, W29011, AI333196, AI825897, AA314971, AV752594, BE005606, BE858054, BF130219, BF576841, AW664049, AV661779, BE005669, BF540905, AW022145, N77557, N28928, AA243776, AA165101, AW900013, BF589341, BE005676, BE005672, BE299622, BE005575, AA228021, BG120042, AA743613, BE005741, BE005737, W60732, BF952459, AI299595, AI246278, AI080681, AA926635, AA035737, AW631275, W73050, AI379933, AA228112, BF954892, BE005568, BF963753, AA082696, BF670939, BE675773, BE005736, BE005746, BF327649, AI274376, AA281420, AA243648, N27998, BF575026, BE164952, AA278973, AA410182, AA290935, AA232786, AA410201, AW630845, AI873477, AW953374, AI830057, AI026003, N43014, BE084625, AV682830, BE081358, AW900070, AI828386, N75197, W37990, AW900066, AV654432, AI282107, AA233347, N36648, AI095232, AI915416, BF363823, R56367, AV659848, D56390, BG037063, H04632, T08244, AV650468, AA130092, AW193046, AW468972, BF577350, H42814, BF790682, AA778440, H21609, AV658915, AV751826, AA386234, R31373, N37091, BE762493, BF239542, AA912662, M78700, BF725237, BF247208, AW900064, BE708290, AW007159, AA310870, AW662402, R76203, AA639654, AW999182, BF950167, AI094600, AW021634, BF737909, AI683811, AA057679, AV651954, T35315, AA053789, H12348, AA094999, BE814819, W80865, N47433, H72981, AW370192, AU145818, AV750848, T34113, BE000442, AV750781, N50027, BG057321, W07579, T31648, AI744925, D58486, T30904, N80416, AI698554, R59114, F06223, C04716, N46147, D82417, N22321, N43000, BF927325, BF029395, BE165011, AA298197, BE181257, R78803, F12336, AA486303, R96110, AI363334, C03677, T66084, R33003, F06176, R24775, AI479455, AU144460, T16664, AI963359, AI445747, AI339917, AI500179, AI653997, AA693500, T56448, AA737626, AI333501, AI697381, AI040028, AA302875, N21339, AI467948, AI336372, T31494, N38773, AV747459, AI244054, AW663192, AK025782, AF062347, AF062346, AL135924, AF062072, AF062071, AC011497, X75687, L37047,

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HCRQL51	584	1022997	1 - 2305	15 - 2319	AU119322, AU118070, BF793583, AU137424, BE617595, BE315138, BE745899, BF968625, AL536796, BF035337, BG252446, BF037602, BF034003, AW962462, BF032444, BE906949, AI735021, BE788139, BG180237, BF968987, AA742531, BE251625, AV686830, BE293987, AW961556, BG180156, AI885309, BE796435, BE780280, BE301295, BE746423, AV703004, AA305098, BF035583, BE294731, BF306595, AV703002, BG179712, AL525791, BE298699, BG114053, AW411113, W74495, AI669362, W81038, BF032316, W80993, BE250265, BF308144, BF203753, BE544148, AA164898, BF219917, W52079, AW055121, AU151701, BG026198, C18503, AA826677, AU152875, AA861256, N58519, AA490662, BF107490, AW439205, AI141566, BE295898, BE467825, BF939939, N78110, AA022816, AU145696, AI139127, AI332333, AU144725, AI687696, AA164350, AI131285, AW026846, AA628910, AI312082, W68312, AI160305, AI185908, AA490663, AU131850, AU146589, N52266, AU153513, AA452014, AI144355, BE297017, AV747490, AI362317, AI887487, AA460515, AA628412, AW028103, AA063604, H98032, H98026, AI761235, AA902345, AU150829, AI435142, AI185808, BF204612, AA865476, BE298732, AA128515, BF195219, BG054834, AA834957, AA022724, AU150185, AA452667, AU157170, W79092, AI280837, AI146288, N99570, AW411362, AA406257, AI521491, AU120552, N70514, BF589080, AI375013, BF110251, AI141866, W92519, W69407, AA046582, AA411293, H19196, AA770242, W79442, AI190213, AA406349, AI221257, AI333864, AA886676, BG111370, W03825, AA406194, W68313, W95431, AA903867, W05412, W74422, W74431, AI141157, BF793551, AA653273, AI038020, BE271596, AA694594, AU131039, AI878927, N95320, AI802326, AA305289, AW411114, R18211, BE616934, AW069853, AI471836, BF793734, AI150777, W69593, AI094648, AV693992, N90108, BF365091, AA931449, AA039647, W79185, W73571, AA653287, AI185405, BF330499, R70970, H97401, AA039648, F08689, AA046668, BF038202, AA129961, AA305621, AI871226, AW087931, BE271614, BF309462, W38390, AW802705, AW806684, W94567, AA367561, AI097533, AA621450, R17280, AI057156, AI214700, W76075, AI015116, W95558, W81075, AA693348, BG036963, BE295852, N70464, AA449581, R89201, AA368025, AA991769, W42631, W24562, AA649724, F08884, H97406, AA450357, C15326, R66204, R96759, BG036738, AA328199, F08872, AV685126, T19284, AA460514, W79342, AW044059, AA728839, AU127692, AA331425, BF054990, T51402, R44806, AW023107, AA330284, AV752334, AA340217, AA358762, W79158, AA494531, W73490, AU129611, C15210, N46311, F11207, AX014085, Y11534, D78611, D87367, AC007938, D16262, AL445439, AK002086, AK024414, AF157833, T48441, T52292, R19141, R23196, R23195, R23611, R24673, R25173, R41957, R42149, R41957, R42149, R67082,

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HDTCC55	585	102304 6	1 - 520	15 - 534		AA258999, AW968317, AA188896, W37285, AA279200, AI224604, N46923, AC007246, and AC007253.
HOOJQ91	586	102304 9	1 - 1295	15 - 1309		AW168960, AI768465, AA833900, AW513031, AW172822, BE047295, AW168819, AI922412, AA234667, AW167313, AW072542, AA234092, AI733409, BE047365, AU147222, AA169392, AI683793, AW150155, AI812106, AW194288, AW189221, AI042034, AI624047, AI564173, AI870263, AW192809, AI743616, BG166439, AI623851, AW419167, AW002809, AA937976, BE047176, AI564249, AI624863, AI623924, AI469088, AI041979, AI871945, AI871951, AI580123, AW205936, BE935573, AI371324, AI554903, AI625585, AA828595, AI783522, AL047564, AI745174, AI566183, BE677512, AA426189, AI826615, AI333335, AI253620, AI347565, AI248726, AI201873, BF433582, AI435879, BE674699, AI367602, AA962745, AI360271, AI417677, BF002902, BE677503, BF109285, BE045621, AI499139, BE315309, AI671362, AI539403, AI674360, BE503132, AI859468, AI301030, AI767147, AW169324, AI694531, AV754007, AI310735, AW157803, BF724651, AI826759, AI279129, AI003585, AI621336, AA827587, AI680494, BE218962, AI078673, AI672366, AI733257, AA789104, AV754606, AA205327, AW170737, AI093680, AI926281, AI619860, AI784110, AW293059, AI800270, AA283760, N25626, AA457543, AA559351, AW473664, AA828577, C75159, AW130212, AI872863, AA302630, BG166851, H46978, AW002819, AA831557, AI200964, AW512414, AI290120, AA464958, AA931732, AW979025, AA405630, AI817564, AI124945, AI478915, AA809727, AA286859, AA283951, AA829588, BF841884, BF346199, AA287165, AI278996, R34748, AI246535, AA253309, BG113717, AI923125, AW971894, BF769175, AA984914, AI370393, AA134112, AI381491, AI793281, AA115873, AA029807, H09578, BF814192, AA234721, AA252903, AA629539, BE932216, AI191747, AI669856, AI565478, AA987462, AA703946, H01491, AI955885, W81069, H17450, BF850162, AA384359, R35085, AI761053, BE963431, AA702262, R51044, R09408, AV750439, AA978001, F12486, AW867924, BE618648, AA757319, AI001988, AI935395, AA526772, H85093, AA582172, AA721397, AA552269, AA721299, AW867939, AI247246, AI453231, F15201, AA384384, BF083266, AW602400, BF940390, BE774537, AW973189, T74222, AI201095, AW867946, AI935681, AI865498, AI804497, F15194, AW977077, AI287361, AA788650, AL080317, AC008554, AC011751, Z98750, AL357654, AL158167, AF179874, AL031073, AC016678, AC010598, AL122001, AC022401, AL157931, AC010877, AC007068, AL121947, Z97876, AP001748, AP001629, AK022175, AC005023, AC011506, U85197, AE000660, AC002301, AL121931, AC012099, AL121593, AL109843, AL353759, AC006313,

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HCE4K28	587	1023227	1 - 828	15 - 842	BE251233, BF038927, BF347465, BE255791, BG261100, BE265011, BG252766, BF237964, BF341361, BF811744, BF812225, BF812221, BF811725, BF803568, BF683177, BF811925, BF803566, BF803575, BF341300, BE710680, AI338346, BE257293, AA740876, AW247781, BG149833, BF526519, BF808322, BE266628, AI813350, AA419453, AW007022, AA159868, AI394647, AI831560, AI986018, AI391639, AA251685, AI923681, BF808339, AA159159, BE501108, AI283861, AI459093, BE251035, AW167781, N57101, AI191699, AW137364, H80556, BE736716, AW793699, BF718607, BF923554, BE466741, AI245965, AA708766, AW571508, AA251686, AA252787, W76495, BF434616, AI955009, AA419463, BF812236, BF378516, BG056211, AI003741, AI203962, AI057195, AW026970, W16577, AI376270, AI300556, W71991, AA394018, AI094017, BF811912, AA609205, AI379060, AA461579, AI421922, AA084917, AI356865, H18135, AI783705, AI127734, AI370833, T68938, AW976556, AA084133, AI191294, AI826910, BF108552, BE766920, AA679251, AI269971, BE394697, AA601010, AW883934, AW883925, BG014220, AI800716, BE671366, BE673174, AA744620, AI344391, AA632031, AI400496, BG014333, BF718567, AI796780, BF348502, BG236778, AI378507, AI744581, AU134588, AA159208, H41958, AI241187, U66879, AF021792, I63695, AR079500, AF031523, AF031227, AR027720, AR027721, AR027722, L37296, AR053293, AR027723, AF003523, AF279910, AK023420, AF279911, Z57098, AR027724, AR027725, AR027726, Z57099, AR027727, and Z57752.
HPDVY62	588	1023264	1 - 1441	15 - 1455	BF791680, AL157538, AI610419, N76659, BF216785, AW139803, AL079664, H15335, BE697296, BF906493, BE142894, AW797489, W32059, R55591, BF062564, BE835658, BF766768, BE546573, AV692836, R22184, T85798, BE142893, AW379474, BF687947, AA329802, BE536844, AW903869, AW903870, AW380710, BE819364, AR016730, and D50857.
HLHDK42	589	1023339	1 - 500	15 - 514	
HLDRQ55	590	1023375	1 - 409	15 - 423	BE561708, BE397890, BE268639, BE397751, BE397790, BE269151, BE873069, BE268295, AU120617, BE271270, BE268703, BE268701, BE398100, AA334095, AW995307, AW995309, W31960, BF895806, BF931643, BF930965, BG002721, BG002138, BG002722, BG002718, BG005940, BE174438, BF819638, BE167551, BF819433, W76394, BF812079,

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HVVB106	591	102341 4	1 - 1435	15 - 1449	AU121060, AL524073, BE731783, BE733775, BE798760, BE797665, BF982757, BE729218, BE728554, AV723001, AV716494, BF695695, BF242517, BE732954, BF795423, BE879759, BE732923, BE562197, BG115476, BE896076, BE562376, BE794139, BF672980, BF032401, BE732931, BE563691, BE896648, BE885875, BF213466, BE874320, BF665994, AW961027, BF667041, AW961019, BE619281, BF965285, BF184706, BF183836, BE543111, BF240830, BE270698, BF973136, AI114724, BE385687, BE787172, BF978288, BF125558, BE907607, BE391842, BF694036, BF184106, AW951807, BF212993, BF184932, BE734775, AV715859, BF573586, BF697212, BF103826, BF213045, BF701226, BF238438, BF212145, AI525578, AV710440, AV759667, AV703094, BF698530, BE548132, BE748425, BE564883, BF183893, W02952, BF685104, BF212212, BE564063, BE567314, BF028072, BF697499, BF672133, BF695461, BF664731, BF573565, BF212506, BF699650, BE562148, BE958217, AA187814, BE958124, BF695287, BF184999, AV717310, AV706418, BE567531, BE737889, BF103745, BF668704, BF665496, BF242298, BF699106, BF132731, BE566481, AV715122, BE568506, BF571371, BF700006, BE270579, BG110157, BF212115, BF668868, AV715832, AV714082, AA187818, AV714956, BF027705, BF695727, AL524072, BE250921, BE564282, BF207927, BF132342, BF665427, BF208451, BF239518, BE568083, BF184647, BF214386, BF351648, BF668895, BF029289, BF573910, BF212012, BE407757, BF248417, BF132410, BF698893, BF696699, BE563995, AV716411, BF977835, AV715099, BF155127, AA315423, BF029476, BF700327, AA011002, BF030329, BF210488, BF671021, N24411, AV722691, AW631367, BF239345, BF028941, W39678, W07050, AV750423, AA313955, BF744150, AW751793, BF029529, N79718, AA588785, N27672, BF212072, BF211229, BF211856, BF242151, AA037095, BF034657, BE960836, AA101348, BF214352, BF103884, W81499, BF239431, BF698675, BF215318, H82172, AW629729, AV761372, BF215826, AA157381, BF126109, AV756747, AV756268, BF676288, H16955, AV712613, AV762396, T32107, BF667232, BE777574, BG026950, AA157614, AV717904, BF570823, AV658036, BF239745, W40280, AV713889, W16740, BF217052, T59582, AV750431, AV685082, BE775036, BE748945, T35555, AA305434, AV707476, BG035879, AI742758, AV706173, BF701311, BE775071, BE619895, BF695315, BE569188, W24555, BE567258, W65442, BG034184, AA363213, H81955, AL037301, T34594, BF354152, T33932, Z45780, BE709223, AU133503, AV715886, R00935, BE614342, W19245, AW025087, AV755537, BF243756, R22626, T35968, AV656765, AW363004, BE613624, T49361, BF354185, BE254680, N56123, BF753104, BF748791, AF064603, AL078477, AK001768, H95940, W24774, and AA089459.
HOCME51	592	102342 2	1 - 820	15 - 834	BE903361, BG024522, AU121709, AL520222, AU120408, BF312234, BE280271, AL528866, BG030073, BE735338, AL529949, BE254932, BE873142, BE871646, BE889244, AW445184, AL519310, BF339823, BF944071, AW732693, BF205332, AW370642, AW246161, BE262499, AA702613, AW246057, BE314433, AW361547, AL519664, BF313220, BE280953,

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HPDOP74	593	102353 1	1 - 1646	15 - 1660		AL515112, AU142335, BE747636, AL519047, BG034207, AU130268, BE900224, BE797717, BE797012, BE794333, AU120518, BE741737, AU121130, BG163776, BF035644, BE793884, BG258183, BE791478, BE790974, BE744546, BE734152, BE787289, BF569162, BE744251, BE903073, BF025650, BE791225, AU122661, BE733512, BE561359, BE270507, BF984460, BF568938, BF311137, BE732820, BE253671, BE274893, BE740907, BE382686, AU131487, BE908861, BE901585, BG251242, BF317343, BG255108, BE270700, BE730619, BE733166, BE790899, BE513857, BF974994, AU143085, BE296428, BF037558, BF972271, BE562328, BE733956, BE397680, BF568100, BE548679, BF969945, BE898349, BE541044, BE386114, BE732240, BE264178, BG255263, BF308361, AI246046, BE269817, BE257703, AA928500, BE251347, BE787474, AV714041, BG119567, BG030821, BE884879, BE386634, BF308115, BE268046, BE267345, BE539029, BG258880, BE792587, BE255191, BF305594, BE560772, AA402325, AI003495, BE902573, BE295292, BE270267, BE536427, BE384555, BE397681, BG027207, AW733034, AW410847, AW950871, AI859597, BE182609, BE514319, BE182688, BE267828, BF797623, BF305378, BE562077, BF316656, BE275737, BE270325, BG027977, BE252374, BE294306, BE390156, BE389542, BE257279, BF791831, BF309261, BE280388, BE513455, BF313867, BE269096, AW079058, BE263474, BE384067, AV733594, BE895782, BE279042, AW369617, AW733050, AW473344, BF125667, AW169145, BE260112, AU126285, BE894716, AW276653, AA074628, BE277505, AI597736, BG256576, AW247190, BG121290, BF303833, BG249325, BE622224, BF312323, BE252020, BE539532, BE886264, BE256126, BF206827, BF692334, BE268057, AI859592, AA187762, BE279598, BE542589, BE265697, BE798811, BG180827, AA595282, AA081122, BE388284, BE537314, AI888202, BE901326, BE256075, BE387931, BE294099, AI672924, BF315163, BF695645, BE398080, BF983598, BF128665, BE394973, BF838286, BF206986, BE295035, AW247314, BE312949, BE542939, BE301402, AA736416, BE622625, AA402733, AA479876, BF125389, AL038991, AA147791, BE743553, AA075926, AW959817, BE567356, AA191539, AW008725, BE791264, BE259660, AI689394, BE933968, AA588318, AW238920, AA308544, BF209071, BE304572, AA189167, BG255226, AA479766, BG179204, AW247110, AA903041, AI241523, BF238540, AW406842, AA306580, AA155786, AU151057, BG249268, AW733038, BE208529, AU128829, AU159673, AW169059, AA583794, AI475144, AA081167, BE386908, AA488332, AA724742, BE297085, BF033617, BE798264, BE267981, BE149825, AI673444, N52020, AI298290, AA983274, W28391, BF209617, BF840705, AW138544, AA443586, AW966061, BF058848, AW581061, BE263571, C06415, U59435, AR035973, U87954,

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HMSOH12	594	102354 5	1 - 1560	15 - 1574	AL533942, AL517106, AL519158, BF969343, AU123953, BE274430, AL079359, AL516731, AU119388, AU137581, BG260794, BE729363, AU126169, BF968356, AI613467, BE891343, BE856952, AI300483, AV758159, AW193927, BG253821, BE561707, BF685254, BF025714, BF204435, BE535183, AW189984, BE615514, AW411390, AA843807, BG110117, AW130652, BF686761, BE251866, BG106071, BE866866, AI922394, BG109089, BG259964, AI201699, BE390849, BE879520, BE397528, AW511981, AI963633, BE856814, AI423945, BG031061, BE514238, BG254463, AW245885, BF797060, BE618666, BF240199, BE270714, BF237622, BE391206, BG251685, BG231965, BE735492, BF576343, BE543072, AW245627, BE874828, AI949356, AA528085, BG058617, BE542855, AA922069, BG058783, AW675410, AI676057, BE563941, BG110677, BE963465, AA586624, AW081836, BE258732, BE737235, AA578813, AW304104, AI687719, AA205408, AV693973, AA599128, AI829317, AW249959, BG167562, BF793110, BF312730, BG171677, BE537970, AA863168, W58256, AI332541, AW411391, BG179859, BE869765, BE391483, AA962825, AA192343, AA563661, AI610728, BE256347, BG149625, AA583073, W38880, BE788717, AI128002, AA862353, BF034961, AU157285, BE270231, BF126612, AI077779, BE265418, AA129387, BE408325, AU145745, AI094998, AI951183, AA868941, AI089484, AW591545, BF684418, BE397990, AW768554, BE729211, BF241282, BE866301, BE263533, BE392663, AW104917, BE793386, BF338208, BE270930, AW970516, BE794328, AI159843, AI361579, AA970295, W58431, AW078838, AI352387, BE222412, AA977387, AI922344, AW246226, AI359386, AI539440, AW007996, AA232540, AW950483, AI361670, BF970307, AL120366, AI300132, AL514702, AW009776, AI185747, AA282066, AA099319, AI939298, AI284003, AI809064, W69208, AI538039,

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HIBCN87	598	102383 7	1 - 1739	15 - 1753	AL043219, AL528050, AW579882, AL528049, BF976767, BF337065, AW088366, AW953211, AA496850, BF525754, AW152013, BE672597, AW243555, BE779803, AI818186, H17775, AI653697, BE251084, R54236, AU160597, AU150608, BE208597, AA496891, AI871013, AA428540, AA349190, AW249598, BF350791, AI701503, BE502287, T18883, AI202674, AU151739, AU152190, AW732070, AI376266, BE265052, AW139928, AI299710, AI888510, BE206965, AI658535, AW341396, AA912087, BF224111, AA694485, AA432221,

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HCOR157	603	1024556	1 - 1699	15 - 1713		AL518234, AL517420, AL518235, AL517421, AU119983, BE798338, BG112454, AV707371, BG260531, AU127995, AI189917, AI921102, BF978880, BF669190, AI884858, BF027153, AW338093, BE466119, AW953727, BF979160, AU139989, BF978466, BE783488, AI183437, AI954430, BF791557, BF978243, BF025817, AW261922, BF978088, BF107349, BE075024, BE778589, AI680398, BF673817, BF978523, BF978407, BF701537, BE566570, AI768673, AI201541, BG163251, AW304397, AW183634, BF571803, AL038118, AW130034, BG170433, BE175735, BF515534, BG004699, AU150344, AI183432, BF732458, BE785549, AI792331, AI689697, BF691267, BF691829, AI792274, AU129140, BF977366, BF793882, AI743234, AA209379, BF667452, BF691937, AU134136, BF692573, BE350861, BF509852, AV731487, AW993769, BF515273, W58689, BF675402, AW338336, AI091201, BE565598, BF940666, AI435388, AI564223, AA136469, AW022986, AW951400, BF382040, AW044585, AI334655, BF977189, AI087941, W16647, BE440085, BF978269, AI954779, AW439739, BF977224, C17665, BF691699, AW589843, BF086829, AI962856, AW993713, BE813383, AA635975, T41075, N67348, AA669436, BF205542, BE840232, T40208, N55699, C01780, AW969659, W58688, BF691679, H13469, AA501438, AW627340, N88289, BG163724, AI753097, BF204709, BE827968, N88012, BE819566, BF957218, D59346, C04830, N99580, BF990912, R58442, BE009393, N66008, AI963279, AW088858, BF990569, BF691146, AA129069, AA371029, H13424, AI671008, AW000997, BG004453, N56423, BF977622, BF570803, AW270948, BF925478, AW235351, BF571561, AA095713, AA247163, BF573202, BF977815, BF572251, AA936152, BF057702, BF752392, BE930777, BF570501, AW135218, U42349, AC010656, U42360, U42350, AF028729, U42351, U42353, U42354, U42352,

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HOPKF60	606	1025047	1 - 1153	15 - 1167	AL522806, AL530716, AL524869, AL514554, AL522807, AL528660, BE744476, AL524868, BE795215, AL530715, AL523498, BE746558, BE515281, BE732657, BF026691, BE562270, BE794244, BE614715, BE796153, AL528995, BF342150, BE562318, BE795209, BE799700, BE792917, BE619480, BF312162, BE271742, BE793871, BE561217, BE797758, BF347395, BE729940, AL528659, BE792758, BE791304, BE737213, BG120307, BE619803, BF317146, BF338124, AW170427, BE797844, BE889282, BF975387, AI085365, BG250716, BE901025, BG025112, BE873025, BE615263, BG034888, BE792059, BG254776, BE546203, BE559492, BG032030, BE743855, BF036116, BE793590, BF686394, BG122718, BE902113, BG034948, BE781511, BF127707, BF526475, BE512980, BG120775, BF311006, BE731573, BE619277, BE270019, BF684500, AI680336, BE745659, BE743493, BF115664, BE280108, BG165341, BE280395, BF973317, BG178740, BE514708, AW170278, BE879370, AW163631, AA843221, BG030875, BE732891, BF975820, BE732780, BE883748, BF697912, BE295042, AW157317, BE903040, BE386716, BE272986, BE791688, BE875650, BE260624, BE794044, AW163373, BE561670, BE272733, BE396802, BF316171, BF317100, BG106562, BE883648, AA824336, BE256051, BE269078, AI192786, BF341436, AL528994, BE902919, BE260595, BG118678, BE788586, BE270049, BE302709, AW732756, BE619890, AA523285, AW246027, BE385288, BE396967, AA933089, BE674906, BE408276, BE408481, AW673443, BE268753, BE314775, BF308951, AI591067, AA779812, AA205564, AI073973, BE397633, BE383129, BG236109, BG167939, AI027987, BF692078, BF345293, AA512937, BE267414, AI992135, AI357176,

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HBDAD74	607	1025102	1 - 1398	15 - 1412	BE736801, BF969590, BF106136, AA625524, AU121352, BE897109, AA043108, AU145998, BF033072, AI936576, BF376388, AI801002, AU147185, BF439149, BG055473, AW269599, AW611722, AW952922, AW301615, BF197125, AI459912, AA926686, AW467409, BE077028, AA838345, AI093893, AA278828, AI659015, BF376386, AA838242, AW058479, AA487243, AA809385, BF091565, T03425, AV648362, D52837, AL043290, AA609681, AI250181, AA811075, AA772712, AW771863, AW090763, AU117211, AA731830, AA922247, F08952, T32447, H83659, AA731456, AA836501, Z30140, AA278826, D56794, AA099843, D57988, T99109, BF969193, N43955, BE220184, AI298948, BE784156, BF576720, D57308, T86662, AW341298, AA962369, AW935658, AA508234, AW402414, AB014566, and AK021890.
HPCTY12	608	1025231	1 - 1832	15 - 1846	BE793649, BF971197, BE795708, BE263381, BE746308, BG110568, BE389356, BE797452, BE745259, BG257094, AW136364, BE294558, BE466733, BE514731, AW512259, AI333322, AA809127, BE300827, BF131512, BG258996, AW167047, AI283089, W87879, AW675811, AW418601, AU149253, AI802251, AI885862, AW181883, AW769136, AI969152, AW672754, AI825472, AI494276, AW379444, AW189438, AA115381, AI278255, BE768392, AA115380, AU125640, AW839959, AW058036, BF109114, BE535699, AW275265, AW731809, AI559688, AI283087, AI002252, BF031735, BE208171, AA679712, AW089758, AI696514, BE794062, AA853283, BE791318, AA853284, BF754628, T16124, BE074565, AI446312, BF361357, AI468188, BE464592, AW888974, AW373076, AI417732, AW386230, AW134955, AW386248, BF091908, AW373100, AW386251, BE514198, BE208475, AW372712, AW386250, AW386279, BF927794, AW372691, AW372725, BE314800, BE170974,

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HFASF12	609	1025327	1 - 580	15 - 594		W74437, W44568, AA902397, AV707142, AI718987, AW006030, AW069861, AI937375, BF195175, AI376862, AI129529, AI140429, AI360987, W94766, AI080273, AI143504, W95201, AI313416, AA992722, AI042534, AA617676, W79083, AI613484, AI015213, AI368370, AA534987, AI721088, AI468012, AI077643, N77202, AA688329, AA551878, AI589098, W44607, AA447654, AA932704, AI640396, AI810026, H94600, AI370686, N55012, BF792740, AA428210, AA361190, AA909835, C01634, AA888991, AA584756, AV762430, AV656063, AI039089, R29258, AV762454, AI753113, BF589770, Z85986, AC006064, AC005102, Z83840, AC002504, AC011479, AL031681, AC012384, AC004834, AC008569, AC006511, AL035249, AP000031, AC008267, AP002085, AF238380, AC002425, AC004867, AP001711, AL035685, Z95115, AL161936, Z97985, AC009731, AL035407, AC004878, AC020904, AP000350, AC005098, AL096701, AC005156, AP000008, AC008044, AL022316, AC004166, AC007021, AC005488, AC022392, AC005089, AF006752, AC016543, AC009123, AC005332, AC008585, AC007425, AF001549, AC003962, AC004966, AC005072, AC004965, AC005015, AC004099, AC004906, AC012076, AC005071, AC011475, AL159977, AL163285, AC004216, AC005399, AL137012, AC018764, AL132653, AF190464, AC010271, AC008745, AC006080, AC004663, AL035086, AP001748, AC004826, AC004971, Z84466, AC005081, AC008474, AC011895, AC003010, AC005921, AC005581, U91326, AL121754, AC022517, Z95114, AC008155, AC002059, AP001435, AL138759, AF001548, AC011491, AC024239, AC006449, AP001753, U95742, AC002404, AL136137, AC002351, AC006241, Y10196, AC005815, AJ003147, AC007868, AC005288, AC006077, AC007182, AC073316, AC007957, AC007664, AC002477, AC007216, AC010618, AL109613, AC005952, AC005486, AL024474, AP000704, AC008750, AL031848, X54486, AC005103, AC005876, AL049843, AC011248, AL136097, AL034380, AF196972, AC002996, AC007956, AF047825, AL109935, AC005158, AC016830, AL162615, AP001631, AL162578, AC002302, Z95116, AP001727, AC004876, AC004859, Z95152, AL033524, AC005666, AL139352, AC002550, AC002565, AC004638, AC007597, AC000082, AL078581, AL121891, AC005971, AC006530, AC002544, AL049760, AC008784, AP000556, AP000557, AL049830, AC009363, AC004020, AC011495, AC004987, AP000552, AL109824, AC005323, AC011469, AC004703, AC006948, AL033376, AL033529, AF001550, AP001712, AP001725, AL442166, AC007684, AC002126, AC020906, AA946863, AI338775, and AW193385.
HLIBM71	610	1025359	1 - 894	15 - 908		BG250974, BG029102, BE277201, BE728640, BG254554, BG024609, BE410373, BE392289, AI149096, BE409096, BF031284, AW963265, AW073167, BF316784, BF668400, BE747510, AW955218, BE276878, BE256069, AA446733, BG180464, AW163381, AW160356,

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HNOKW27	611	102536 6	1 - 1957		15 - 1971	AL521068, AL522884, AL530162, AL524040, W37955, AW770554, BE644886, BE840625, AW452820, BE265669, AW963332, AL522885, AL521069, AI292078, BF110047, W56568, R52296, W56790, AL530163, T74226, BE220807, BE465059, AI763199, AW204769, AW752090, F10108, F12489, BF924472, AW136225, BF311074, R54461, T81424, AA324731, AW177463, AW177477, AW177471, AW177489, AA362902, AW752092, AW752100, T89091, AA323246, W37895, BF330968, BF312880, T99457, BF316850, BF315145, T81423, BF314658, T98861, BF314088, AI392731, AA366043, BF058456, BF312070, BF312287, BF315583, BE169944, BF304354, BF757470, AW161533, and BE260401.
HPFDG48	612	102552 6	1 - 711		15 - 725	AI005650, AW193649, T86155, R91705, R94928, T86262, R92142, T78635, BG059124, BG059311, T79120, BG105372, BE903730, F32795, AI086235, AI304866, AI094698, AA894578, AI268640, AI081163, BE856894, AI380568, R12395, BG031198, AI708047, AI358636, AI216820, AI142089, AI684336, AA804193, AA552494, AA687862, AA507473, AA879115, AA279014, AA513429, AI571415, AA918417, AI971055, AI051704, AI937021, AA099438, AI494389, AI493513, AA948053, AA581118, AI184757, AA100071, BE731794, AI879919, AI085722, AI536966, AI591039, BF124917, AI830888, AI334931, AW008928, BE274775, BE902881, BF125296, BE281210, AA595467, BE392986, R71239, BE268783, R96465, F37009, BF818912, AA401736, AA857524, AA654076, AI620153, F21367, AA292902, AF004164, AA316678, BF845471, BE694933, BF433106, AW166722, AI866691, AI859464, BE047798, AI554343, AI521799, AI589947, AA713511, AW082623, BG110241, AI918554, AW151979, AW006947, AI889379, AI049669, AV750565, AL042191, AW163834, BF791871, AI345415, AA580663, AI690813, AW194014, BF814360, AI690948, AI866465, AI560227, AA713851, AI623941, AI801325, BE965064, BE536058, AW083804, AI623648, AW263569, BE393551, AI499986, AW055252, AW263804, AI627714, AI688854, AA761557, BE883591, W48671, AI241763, AI500523, AW088605, AI433611, AW025279, BF925370, AI491710, AI859644, AI658566, BE879772, AI023513, AI860027, AI648699, AI285439, AA999906, AI919600, AI334893, AI699020, AA479803, BF339548, AI471429, AI636507, AI475270, AI582932, AI305157, N99092, AW169784, AW827211, BG168185, AA776730, BE964497, AI445505, AI440422, AI680504, AI313032, AW021373, AA693444, AA514684, BE875959, AW081343, AI872472, AI872489, AI887381, AA761608, AA827630, AV721917, AV732941, AI310332, AI784214, BG029058, AI818565, AI868931, AL037602, AW084233,

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HVVBF24	613	102571 2	1 - 2799	15 - 2813	AL523342, AL523341, AU131342, AU130188, AU132871, BF792339, BF969571, AU128453, BE612552, AV715980, BG163411, BG030336, AW971686, BF110376, BE618241, BF974612, BF984410, BG170875, AU135635, BG171572, BF969111, AI114695, BG116185, BE777867, BG105637, BE788046, BE617832, BE272766, BE613122, BF983830, BE781807, BE327921, BG179051, BF694121, BE887450, AI201635, BF036804, BE620254, AV681961, BF031840, BE617364, BF526430, BE622063, BE003577, BG104924, AW055018, BE866172, BE785071, AI608845, BG028069, BF131292, BE881701, AI924945, AI380812, BE874221, AW192686, BE536070, BE867342, AI922811, AW173491, AI872015, AI609520, AI686062, AW069849, AI683739, BF214650, AI819265, AI880749, AW270734, N52135, BF666207, AW069593, AI372094, BF792983, BG261142, AI281743, AW518923, AI206934, AI373678, BF383161, AA082795, AI961375, BE002647, AA226854, AI911048, BF035162, AI812059, BE620794, AA776780, BF856676, AW022325, AW073782, AI309594, AA810868, AI494000, AI446075, BF695594, BF512656, AI207767, AI129435, AA687662, AA131910, AA454514, AW951534, AI424088, AL041920, BG249492, N48494, BF751865, BF901474, AW631311, AA581807, AI300892, BF130479, BE393485, AI808521, AI079259, AI082288, AI049506, AW262940, AA946825, AI090047, AW189477, AA259132, AI811369, BF102751, AI669830, AI751076, BF869800, BF115334, AI418580, AA593606, BF759415, AW021418, AI167242, AI597588, AA404373, AA100982, AI651918, AA421726, BF214846, AA258035, BE622898, AI801278, BF241327, BF896991, BF326681, AA563897, AI702061, AI654641, AA384434, AI311577, AI765254, AA809460, BE003490, H15321, AA181101, BF735271, AI637684, AI282078, AI916472, R64032, N62283, AW005950, AA223687, AA393919, AI827296, AI262804, AW276270, AW470653, AA621273, AA057165, AA131911, AA587103, BF243199, AI214506, AI754756, AI753767, AA149438, BG112626, AI541328, AI344680, AA452556, BE566015, W73264, BF238851, AW198097, AA724362, N24427, AA835352, AA348390, BF032051, AA223481, AA887918, BE966906, BF185459, AA634529, BE701913, AA780913, AA182968, AA706396, BF748552, H01598, AI431947, AA030051, AA363461, W74019, AA149599, AA169541, H15707, AA227206, AW510577, AA348391, AA345678, R63936, AI625182, N40457, AA149600, C75162, AA935744, C03496, AI469535, AA151523, AA653578, AA918932, AA902961, AA935206, AI620826, AA169442, AA363462, AA372566, AA029939, BE971146, BE246761, H01495, AA587369, BF030133, W32043, AI541323, AI688080, BG112610, W31354, AA424739, AA807890, T11192, AI961814, AA375865, BF476308, AI991359, AA251486, AF130055, X63679, X63678, U19578, N77572, W56403, AA056956, D11950, and AI302326.
HE8UF88	614	102574	1 - 4193	15 - 4207	AL534710, AU117757, AU143487, AL515110, AU130408, AU125089, AU130746, AL514816,

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HOCPY47	616	1025965	1 - 3120	15 - 3134	AL534216, AU124415, AL534215, AU124249, BE793898, AU132166, BE792345, BG111555, AV688850, BG171107, BG028492, BF969425, AI801432, BG108221, BF338327, BF663592, BE619881, BF746890, BE731858, AW965641, BF665525, BG122860, BE003409, BE788680,

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HOVKE20	617	1025990	1 - 2538	15 - 2552	AL530585, AL530586, BE905291, BG250173, AV704437, BE273888, AI742702, AI332375, AW965981, BE733696, BE279265, AI653228, AI823770, AI744071, AA421552, BG165821, BF850738, AI935219, AI089481, AW025353, AI860928, AW024596, N32892, AI803496, N75101, BE207042, AA552990, AI082854, AW675170, AW262745, AW732799, AI128345, AW615487, BF593160, AW467397, AV704688, BG150549, AI089227, AA227791, N52331,

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HODGH47	618	102613 9	1 - 2096	15 - 2110	AV714319, BE245435, BF085080, BE883963, BE315412, T67179, BE731249, BE732012, AW501306, BE077539, AC007041, AF315591, and AF315590.
HODBK27	619	102637 2	1 - 871	15 - 885	AI949324, AI741823, AI936022, AI521629, AI831928, AI972082, AI653975, AI814061, AA910962, AI811709, AW025174, AW806878, AV701632, AA731734, AI862610, AA873562, AA195939, AA421230, AA187668, AW572118, BE350701, AI979136, AA846807, AA034130, AI025114, BE464579, AA947329, AV716043, AA700178, AA039676, AW590977, AI004713, AI889534, AA173931, AI817532, AW130669, AA554142, AA025463, AI753419, W76541, AA947549, AI811560, AI620263, AA009979, AA923500, AA731843, BG179192, AA482908, AA723321, AW023989, AA009980, AA056428, N79453, BE540962, W74316, AI630489, N22616, AA313112, AA968641, AI362535, AW391946, AV703316, AW389675, AA508074, BF197789, AA923028, AI262937, AW515512, AI347796, AW386921, AW392064, BE326822, BE162244, AI440446, BE162241, AV756239, AW392091, AW675605, AA477452, AW601973, BF216423, AW006885, F03610, AA477578, AW043887, AW866509, AA334983, R38720, AI865307, AI689187, AA313113, AW803685, AW271368, AI203830, AA505748, N63156, N28919, AI038034, AA025462, AW392164, AI370254, AW002736, AW392182, BF890740, AW083663, D12030, AA370115, AI745442, AA311321, N23815, AI289078, AI074527, BF673031, AA022500, AA074248, BE882680, BE783374, AI082722, BF985227, BG112403, BE825572, BE765224, BE766662, AA026883, BE708355, BE185094, AA421229, BE939600, BE764981, BG055150, AA730850, N63214, AI869433, AA262825, AW024035, AI074531, BF672955, AW362308, AI814134, AW948438, AW362258, BF571408, AA279008, AW373179, T82703, BF754687, W79250, AI174532, BF357809, C15105, AW960469, AW958927, R29652, AF070540, AF054284, AL137410, AF130099, AX013757, and AR018138.
HE8CH59	620	102680 5	1 - 3000	15 - 3014	AL521879, AL528488, AL528519, AL533556, BE277263, AL521249, BF969645, BE796292, BF339523, AV688166, BE384607, BE793205, BE799022, BF341655, BE792421, BE793076, BE179035, AU120222, BF686701, BF343123, AI912668, BF516065, BE255283, BF514039,

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HSKGR52	621	102691 1	1 - 943	15 - 957	BG026286, BE729382, BE563873, BE409361, BE392296, BE669943, BE218622, BF000652, BF433096, BE465008, BF057153, BE504280, AW027774, AI675461, AI620226, BF591621, BF510496, AI652839, BF433368, AI291296, AI809638, AI400625, AI423961, AI092358, AI681604, AW242346, AA846296, AA846276, AW410676, AI261659, AI085293, AI763186, BE504486, AI867792, AW872376, AA505813, AA962236, AI689885, BF939912, AI279838, AW243337, AI872951, AI077828, AI205630, AI936344, AA505678, AA304442, AI827344, AI301986, AI472586, AW999384, AI698391, BF032768, BF814449, BF895953, AA427700, AV755581, AI280661, AI687127, AI889168, AI677797, BF528433, AL037558, BF340323, AW827289, AI358701, AI690813, BF343241, BE964614, AV682875, BF812960, BF343172, AW129106, AI568138, AL042382, BF970449, AI582912, AW265004, AI254727, AI537617, AW083750, AI277008, BG029008, AW019985, AI365256, BG180273, AL037582, BG105895, AV681731, AW673679, AW169604, AA437338, AL037602, AV729953, AL110306, BG029829, BE769091, AI669639, BE876049, AI929108, BF873239, AI872148, AV735353, BF752858, AI624693, AI802240, AW167918, AI089970, BF751347, AI961589, AL119863, AI359787, BE962727, BF886214, AW082532, AI537677, BF792961, AW583714, AI950664, BE965121, AI335426, AI348777, AV709390, AV703585, AI249946, AL038529, BF909758, AA470523, AI591228, AI570966, AL514717, BF868489, AW827206, BG034550, AL119791, BE878989, BG107847, AL040241, AI273843, AI758528, AW081866, AV755459, AW083573, AW827285, BG113299, BF970652, BF037484, AW051059, AI670009, BF814450, AI433157, AI702073, AW161579, AI567582, BF812961, AI270183, AI521095, AW023338, AI612759, BF036115, AI889189, BG250213, AI288285, AI633125, AI570861, BE895585, BF871314,

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HMUAQ05	622	102691 3	1 - 1600	15 - 1614		AL517599, BF969702, AL517218, AL534615, BF698973, BF697790, BF541755, BF664743, BF668926, BF701473, AA486504, BF700755, BF669603, BE568881, AW842409, BE567626, BF002137, BF665510, AL534614, BE958077, BE958542, BE958374, BF668130, BF699715, BF667431, BE564393, AI339710, BF349427, AA743093, AI278953, AI278568, AI571986, N68247, BE897413, AA341071, BF208801, BF665660, AI346152, BE856973, AA488692, R60368, AA626449, AW751263, AW272569, BE928113, BE928111, BE719086, AA308535, BF090741, AI590397, AI078709, N39886, AW804343, AA133234, AA970783, AA351801, BF757348, H87951, N57132, AA338145, BF196400, AL535854, AW394065, BF884379, AA314945, AA148150, BF062624, AI688621, AI096844, AI860744, AI420708, AW006666, AI358873, AA376417, AA129712, AI219397, BE142524, BE763646, AW050985, BF090738, AA376416, AI362046, AI090396, AW516972, AA309736, AL517219, AA079141, AW970268, AW970349, BE042473, AW389275, AW135592, AA557504, AI471517, AW779413, R60312, AI419556, AI805191, AA534362, N26928, and AL390079.
HCOMA45	623	102697 9	1 - 606	15 - 620		BG120722, AU119018, BF978867, BE889331, W27132, AU153520, BG113292, AW009216, BF247311, BF184156, AI630279, BE734748, AA766615, BE739013, AK001549, and AJ296153.
HE2KI45	624	102700 7	1 - 3373	15 - 3387		AL536336, AL536335, AL523966, AL530021, AL530022, AU117518, AU117962, BE747075, AU134825, BF683999, AU130396, BF000235, BE746436, AU126073, AI621215, BG118397, BG116482, AU139709, BG114753, BE612958, AV681825, AW957859, AU137383, BE742555, BE697596, AW975830, BF034198, AW957782, BG251258, BE896710, AW957937, AW813051, BE697644, BE545203, BF977953, AW271555, BG259991, BG116851, AW957783, BE697638, AV691847, AI629012, AA308190, BF056635, AI950251, BE505024, AW271945, AU152320, BF375062, BF907621, BF907553, AU152599, BF907535, AI768899, AU144646, AI300924, BE697633, AI697765, AU150350, AU154067, BF907622, BE707571, BE697643, AI560075, AW014744, AA313132, AA703214, AU151943, AI564193, AI581089, BF381320, BE858805, AL135260, AU152784, AW338106, AA505767, AI418227, BE502116, AI640554, BE350804, BE697786, BF907545, AU155659, AI767988, AI625041, AI561182, AI140164, AI811500, AI858461, BF907552, AI887429, BE539679, AU144327, AW014169, AI909320, AU152389, AI382104, AA603342, AA888065, BE178682, AI765224, BF335705, BF907547, BF907537, AI968568, AU151554, AI357213, BF381312, AI289596, N42240, AI478340, BF096000, BE746411, AA211092, BE178045, AW793648, AI244198, BF381062, BF753598, AW969744, AA455615, BF448461, BE177876, AA487115, N46990,

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HODDO66	625	102720 7	1 - 1299	15 - 1313		AW149836, AV724255, BE161927, BE795004, AW364505, AW138803, AU137429, BE799764, BE300282, AU125467, BE932164, BE786074, BE882532, AI217476, BE294947, AA070029, BE931550, AA191715, BE931549, AI655979, BG254021, BG117060, F07456, BE255593, BF351838, AL039921, BE886862, BE884446, BE547035, BE889046, BF035323, AI000877, R19564, AU124210, BF345149, F07982, W27954, AA853040, BF345081, BF982641, BE747949, BE612626, BE171987, AV749615, BF893610, AA853928, N86091, BE815909, BE836228, BE836225, BE901389, BE880310, BG026309, BE836276, BG259859, BF057135, AI609376, BE836341, BE711453, BE770291, BF573646, BE770388, BE784042, AW135540, AV692147, BE161946, BE770253, BF768674, AA095377, BG253296, BG106774, BG150448, BF374787, T04998, BE836332, BF735397, BF735624, AA089440, BE619425, BE836369, T11680, BE815921, AW403333, AW388404, BE301162, BF768681, BF735716, BE162677, BE709428, AA603744, AI983648, N56195, AA324509, AA099123, BE160000, BF105891, BE547010, N48490, AA366706, BF760099, N94256, BF677619, N83721, BE301157, AB000717, L43509, J05571, and X68836.
HVVAT45	626	102726 9	1 - 3773	15 - 3787		AL521709, AU139605, AU139786, AU133158, AV715927, BE535428, AV707854, BE882531, AI433464, BE302408, BE220521, AW612477, BG122886, BF593222, AI186034, AA480343, AI082537, AW189879, BE002782, BF675617, BE002805, AU143997, AI745058, AI379721, AA001791, AW118778, AU149758, AA001870, AI190938, AA017469, AI810133, AI580107, BF061454, AA017470, N75111, AW573126, BG119005, AA496528, AI361074, AU155671,

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HVCAG18	627	1027484	1 - 608	15 - 622	BE393771, AI491895, AI972158, BF035171, AI683354, AI634702, AW003747, BE394824, BE208245, BE674284, AW166518, BE394667, AA477548, AI204509, AA433859, BF223547, AA075256, AI459028, AA704365, AW170346, AA719455, BE898899, AI683449, AA293804, AA722190, AA394184, BF061263, AA010660, AI972816, AV705972, AA534766, BE382381, AI800229, AW054677, AA075515, AA291675, AW517880, AI269897, AA025902, AW105621, AA496562, AI131418, AA477665, AA293236, AA972922, AA688358, AA405299, AA603048, AA555137, AI206090, AA452084, AA432228, AI352215, AA327201, AA563656, AA078977, AA451904, AA628896, AI128837, AA010659, AW510341, AI683140, AA025750, AI859472, AW102571, AA477050, AW189037, BF111273, AI680769, AW512687, AI298658, AW193875, AA496431, H50634, AA936665, W67669, BF446212, AA292518, BG150710, AA428593, F02471, AW749395, AA385354, BF877343, W67668, BF876769, AI955963, AI932457, AA477179, BF750539, H50635, AI609687, BF883518, AA335459, BF877245, AA287213, AI540421, AI087799, AA507349, AA284324, AW189604, AW772554, AA506658, AA476938, BE811673, BE694854, AA290981, AA969241, AI685657, AA385556, BE811545, BE811507, AA406009, AW088425, AA477670, AA402537, BE001672, BE746798, AA477553, BE931271, AW779288, BF184297, AA477157, AA290980, F02231, AW467094, AA079060, AA402896, AW207468, AA401329, T28367, AI521428, BE515017, BE001677, BE001587, AA908550, AA403038, AA411029, AA411533, AI963250, BE816517, AI130774, AA402928, AW754236, AA480517, AW995301, AA479786, AA908619, H53726, AX014329, A18924, AL031663, and AF314058.
HPTXK72	628	1027486	1 - 990	15 - 1004	BE393771, AI491895, AI972158, BF035171, AI683354, AI634702, AW003747, BE394824, BE208245, BE674284, BE394667, AW166518, AA477548, AI204509, AA433859, BF223547,

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HHSGW78	629	102840 5	1 - 495	15 - 509	AI040010, AI300866, AA682391, BF109228, N29566, BG231154, AI129244, AV741891, AA761892, AI085911, AA708606, AI347228, AW016268, AI125595, W46147, AI086773, AI090828, AA846190, W49679, BF109594, AI126838, W48662, AA149081, AI343789, AI601178, AA782846, AW965184, AW965196, AA428595, AI129248, AA740563, AA554542, AI338248, W80680, AI025221, AA677392, AI190899, W94099, AI001139, AA683514, BF436689, AI589088, AI244460, N95164, AA907886, AI077390, AA063581, AA526582, H98767, AA729878, AI032677, W49848, AI144405, AA494307, N35698, AA041457, BG026470, AA916799, AA613024, BE792146, AI269011, AA902613, AW025516, AI131435, C21125, AA889491, T60457, AA845442, BE789615, BG170408, AI248145, AW874239, AA055102, AW024412, AI189372, BE312637, AA512949, AI565196, AW016193, AI918116, W84416, BF448735, BF124923, BE769708, AW496831, AA700243, N80608, BE883556,

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HDTLR06	630	102919 1	1 - 2646	15 - 2660	BE880150, AV714766, AL037752, BG249115, BE869900, BF970612, AV716522, BF981298, BF670705, AI807631, AW959676, AA479519, BF699048, BF240530, BF028284, BG112682, BF103751, AI433776, AI085610, BG105696, BF221532, AA479522, BF815176, AV700038, AI979032, AA149078, BF979245, AA868892, BE064495, BF576484, BE779262, AA085763, BE549144, AI888699, AW368466, BF211956, BG231196, AI274793, AI302738, AI685714, BF248036, AW025865, AW510744, AA868627, AW631467, BF757093, BG056635, AA131509, AI566328, BF887743, AA411937, AA099324, AW008987, AA128370, AA101862, AI034130, AA505082, AW474020, AW512897, AA131278, AW801804, BF763378, AI420344, AI707791, AI289004, AA827737, AI307391, AA603153, AI278872, AI088381, AA149079, AW816611, AW768937, AI911177, AI085852, H03698, AI027366, AA993335, AI003565, AI088373, AA194832, AA883469, BE968701, AW025874, N34932, AA411978, H84364, AA709465, AI026993, AW380728, BE004195, AA075705, AA687743, AA708422, AA600355, BF802610, AA505085, AI086107, AA458999, AI038736, H04299, AA069442, AW959683, AI287268, AA346920, AA459218, BF801763, AA558206, D79676, H03699, AA280229, R56481, BE694195, AA468345, AI581421, AA468915, BF801764, AA032256, AI242820, AA743438, R62743, AI690209, AA373919, AI000242, AA102069, H03200, AA411789, R63384, AI537127, AI934536, AA099859, AA993326, AA285277, AA411777, Z21244, R78175, AA508503, X85612, BE165918, AI695567, N43994, AI557451, R81943, H03997, R49722, AA075695, AA468992, H01646, R63438, H03016, AA371111, AA826547, BF735612, BE670784, AI866416, BE005572, AI088382, AA371158, R77810, BE931779, AA296627, R38119, AA298094, T49048, Z21319, AA033629, R38033, BF515977, AA069469, Z21218, T49049, AA092678, AW472736, R26423, Z21382, AA468153, AA090508, AA743841, BE005593, BF804374, BF919743, AW889236, H84365, Z21243, AW611875, AI914841, AI687818, AW858525, AW877209, AL134524, AW968355, AL119324, AW971745, AL119457, AI432644, AW858526, AW861944, AI623302, AX017997, AX017856, AX030435, Y17793, AR066494, AR080280, AJ251859, AF019249, AB026436, AX030436, AX046357, AJ279014, AR060234, AR071207, AL133049, AL133074, AL133053, AL133076, AF064854,

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HOCPL33	633	103087 1	1 - 2171	15 - 2185	BF725593, BF344577, AA291892, AI093722, N35995, N21491, AA493711, T57002, AA650030, F09835, AW953246, AA573152, AA541730, T80464, D31115, BG059601, AA350448, Z25379, AI393498, R39024, R42314, AA865667, N44238, AI088818, BG054755, F08817, AI970892, AW139210, AW338984, AW449202, AI418641, AA729145, T66221, AI910796, T93953, T94411, BF507381, AA350447, BE163296, AW081029, AI208336, AI624663, R16370, AI242755, BF437813, AW905871, T93903, AI906851, F11146, AA507190, AI696468, AV699193, BE245956, AA648118, AL514793, AL513961, AL514731, AL515341, AL513971, F13451, AL514717, AI589450, AI745505, AW016789, AC005551, AJ277264, AL121656, AR089157, AC018514, AF243527, AC008018, AC006115, AL355815, AP001605, AL133240, AC006989, AL031846, AC010412, AE000665, U72620, AL022238, AP001688, AC084392, AL078630, AC005544, AC003689, AC010311, AC005736, AP000252, AP001699, AC007655, AL034549, AC005274, AC016656, AC026431, AL137060, AC069019, AC011484, AF003626, AC004900, AP000134, AP000212, AC010267, AC004659, Z84474, AC003670, Z98049, AP001707, AF050157, AL031228, Z98946, AC013458, AC005082, AC006075, AC008738, AL031390, AC006336, AC010582, AC005944, AL356321, AL355485, AC020947, AC010723, AC004846, AC005725, AP001711, AC007021, AL035658, AL163279, AC021868, AL035668, AL137145, AC009756, AC025167, AL132795, AB003151, AP001705, AL133353, AF314058, AC079603, AC005859, AP001412, AC004685, AL359272, AC019209, AC007907, AL109800, AC004903, AC004161, AC007981, AC005259, AC008394, AC006994, AC007115, AC008887, AL033378, AC011198, AF227510, AL162414, AP001714, AC003060, AC007993, AL133238, AL121890, AC008102, AL139114, AP001726, AC005181, AL109925, AF289667, AL034351, AP000152, AC012309, AL139327, AL136218, AL031224, AC008482, AC015540, AC005742, AP001724, AC006530, AC005370, AL118520, U85198, AC012351, AC017100, AC005914, AL031663, AP000402, AL157903, AF111102, AC006972, AL162455, AC005682, AF053356, AC016620, AC006944, AC027689, AL117186, AC007325, AC005839, AC016831, AF001905, AL109928, AC006004, AC006333, Z84487, AF152363, AC007263, AC016898, AP002532, AC009976, AL050348, AC007748, AL117350, AL035466, AC008747, AL137839, AC004911, AC004808, AL391995, AC017037, AL138725, AC010141, AC007966, AC064878, AL158040, AC021642, AP001717, AC084429, AF125314, AC026881, AP002530, AC005817, AC012526, AC005290, AL008720, AC019173, AC005522, AC011453, AC007226, AL050341, AP000272, AP001691, AC008626, AL008723, AC006151, AL139353, AC007510, AL031054, AC010874, AP001727, AL163207, AL163206, AC007656, AC009169, AL133215, AL163248, AE000664, AC011470, AJ010688, AL021127, AL355532, AC083871, AL031121, AP001728, AC004815, AL132777, AC002553, AL121852, AL049874, AL160231, AL139008, and AL159980.
HPCQN80	634	103096	1 - 2743	15 - 2757	AU125281, AI341671, AI205964, AU125275, AI911769, BG252896, AI378791, AI031802,

		3			BE672902, BF001953, AL038594, BF980802, AU138919, BE891177, BF970173, AW051484, BG250318, BE280981, BE693756, AW362262, BE786824, AW511114, BG113568, BF964615, AA099021, BE904266, BG035645, BF238740, BE536646, BG114756, AW190346, BG113181, AW362861, AW262049, AI263923, BE542722, BF977300, AA610026, AW664463, AI986151, AW360910, AL042274, AI986159, AI422324, AI041639, BF033891, AW338310, BF349988, AI684102, BE701144, AA954206, AI279796, BF594374, AI823866, AA456560, AA436242, AI752275, AW027296, N66002, BF968980, AI401327, AI752356, AU148968, AA235144, AA436919, AL038595, AW105399, AI272955, AI308097, AI539266, AA436243, AA430381, BE838204, AA865506, AI752058, AA972055, AW015391, AA430734, AW268147, AA494424, AA653605, BE818621, AW591117, BE719146, BE838697, N24583, AI701154, BE220373, N95114, BE672172, AI752276, AI801614, AW369379, BF132446, AI752386, BE838699, AA912058, AI750729, AA099099, AA018538, BE838698, BE931347, BF732554, AA659106, BE771906, AA234745, AA478821, BG258794, AW068079, H24829, BF803584, BE899243, AA912162, W25171, BG056980, BG121984, BE932583, AW262918, BF797326, AA346940, AI247522, BG024573, AA628028, AW364305, AI262971, AA625407, AW362150, AI752059, AA576262, BE048271, AW300619, BE838691, H73800, AW016410, AI829861, AI910850, H73787, AA018539, AI681474, AA991165, AL036588, AW673447, AI205671, AI247899, AW364245, AI695237, BE962024, BE897497, AW511522, T89755, AW275459, H89288, AI758343, AV696759, H82662, N95452, AA514818, AI264787, BE838701, AA459675, BE838710, N91004, AW889556, BE869969, AA459797, H89287, T83120, Z28550, AI804910, T73910, AA682987, AW262976, AA598583, AA324634, BE838688, T89397, AW390276, AA876901, AW845090, AA346941, N33730, BE549598, T73942, AA324179, H19255, AI867212, AW376643, AW376802, AW848197, AW848552, AW675770, BF918373, AL134190, AW376632, AI284739, AI769735, BF331292, W20133, AW376583, AA295317, AA970370, BE719069, T30544, AW855261, AA935880, BF034494, BE838694, D38549, AF072697, AF160973, AL161999, AL136549, AB032994, AB050254, L47738, AK024816, AL357618, A74762, N53981, AA935058, AA095975, Z20384, AI034347, and AI537324.
HODEJ22	635	1031076	1 - 1927	15 - 1941	BE612881, AV681739, N36809, AW967677, AI819225, AI689062, AI741346, AI872193, AA282915, AW102898, AW971573, AW629970, AI950344, AW967671, AI683338, AI858509, BF589902, AI950087, AW173586, AA283144, AW150329, AW205862, AI763273, AI890387, AI653832, N70208, AI762688, AA988777, AI821380, AA488892, AA908741, AI633006, AA044209, AA293273, AI356394, AW072629, AI308119, AA251874, AI373032, AA969759, AI539642, AI564269, W01059, AW513996, AA972584, AA642789, AI251473, AW512843, AW505512, AW103813, BF886630, AW513601, AW467940, AA251875, BF993945, R97278, BF819530, AA488964, AI821346, AW276997, BF195374, AW959581, N46026, N50134, H60052, H83488, AA300207, T91721, N75628, N35320, BF196759, AI745010, AI961530, H59397, N22388, R97040, AA908598, AI002839, AA847038, AA856975, AA382351,

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HODFZ16	636	1031085	1 - 890	15 - 904	AU142662, AU122434, BF313104, AW296716, BE082138, C17206, AA825641, H65334, AA807120, BF948913, BF954989, BF962641, BF935143, AW274870, H65533, BG014436, AL038842, AW513789, AL038841, AA991899, AW858064, AI921765, H29930, AW502949, AW150209, AW080073, AI123933, AI123922, AU144023, AU144129, BF871412, AI902170, AC007956, L40400, AB033168, AL133492, AL163303, AC012384, AL109825, AC020728, AL117186, Z82253, AC005323, AC005412, AC079603, AC008745, AC004408, AC025226, AL163246, AC010201, Z70272, and AC005619.
HWGAE28	637	1031316	1 - 2498	15 - 2512	AL532884, AL536010, AU119158, AL532831, AU137754, BE745500, AW007660, BE275049, AU136309, BG252544, BG030152, BF969187, BE784443, BE794719, BF968474, BE783084, BE781638, BE253809, BE899520, BE778167, BE256714, BF526973, BE546562, BG259152, BE778011, AW614628, BE891232, BE731724, BE747256, BE782053, BE784115, BG250699, BE745177, BE902036, BE777819, AU137978, AI066745, BE782043, BF980330, AA573220, AW662390, AU127382, BE301322, BG120424, BG024926, AW239481, AU127941, AI091268, BE779025, AW150072, BE256841, BG056400, BE904709, BE870649, BE258984, BF573556, BF696389, AW780335, BF973777, BE256053, BE781356, BE221362, AW247473, BE782729, BE258556, BG259237, BF131364, BE259358, BF691584, BE254655, BF667102, AW247336, BF977152, AW770805, BF969017, AV689827, BE958151, BF701767, BF698305, BG109265, AU150320, BE388447, BE546560, BF571551, AI568796, BF029871, BF977578, AU127305, BE250863, AI718794, AI690695, BE253419, BE257509, AW073196, AI624284, BE254374, AU126969, AI859836, BF698313, AW196988, BF031160, BE781097, BE254505,

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HOFNZ21	638	1031328	1 - 444	15 - 458	BF686413, AA172312, BE280965, BF027045, AW732580, AW245781, AW245685, AI922686, BE261601, AI752241, BF724479, BE278353, AL045207, BE735320, AW162793, AW239365, BE382409, BE383980, BF037301, BF308536, BE781436, BE797824, BE268521, BE262144, BE731292, BE733603, BE734713, AW663323, AL520921, AL531792, BE903671, BE903610, BE410055, BG107222, AL517770, BF979786, BE732947, BE887714, AW733017, BE391917, BG115216, BF127715, BF308038, BF314417, BE260247, BE408288, AW250530, BE735006, BE902627, BE019168, BG116714, BF795384, BE269556, BE903782, AW732949, BE268384, BE383309, BE279030, BE280838, BE382735, BE278656, BE312285, BE561530, BE734379, BE902509, BF689380, AI815398, BE792513, BE903567, BF304602, BE281170, BE262670, BE561790, BE391391, BE279176, BE735055, BE560537, BE391848, BE390588, AA306149, BE261481, BE313043, BG008258, AA223817, AA314658, AU076526, BE262008, BE382475, W44751, AW960376, BE387281, BE281148, AW083164, BE312928, BE259589, BE312581, BF316894, BE514910, BE262642, BE737459, AI123512, AF100752, AC004472, M30143, and U11760.
HOOKH25	639	103132	1 - 3762	15 - 3776	AL517769, AL520920, AL520921, AL517770, AL531792, AU125829, AL531791, AU124376,

	9			BE731292, AI017298, BE735006, AU120387, BE794602, BF526537, BE792461, BE903671, BE734713, AW024419, BE903610, AA642219, BE796002, BE796372, BE735320, BE734379, BE732715, BE797824, BE732947, BF970105, BE900289, BE561530, BE903567, BE268521, BE742191, BF981332, BE563105, BF984390, AI951753, BE908268, BF685476, BF791975, BE900263, BF688757, BE261101, BE798409, BF037301, BF984474, BE382409, BF793112, BE900706, BE731097, BE746965, BG119696, BG259694, BE262642, BF304404, BE733603, BE383309, BF795449, BE269556, AW001459, BF795384, BE902627, BF983898, AW148873, BG115216, BE740413, AW474138, BF038593, BE872963, BE781436, BE279030, BF344773, BE312285, BE884226, AW003662, AI973118, BE391163, AI824151, BG260928, BG118916, BE887714, BF344389, BE792577, BE383980, BF027045, BE785431, BE902509, AA773468, BE730074, BG170961, BE253728, BE294996, AW732949, AV724100, BF526468, BF344801, BE895051, BE540861, BF689314, AI955325, BF791828, BF308536, BE792513, BE382735, BG107335, BE390023, BE735055, BE613356, AI565761, BE620532, BE560537, BG107222, BE262144, BE391391, BE410548, BF317364, BE869582, BG024898, BF979786, BF316894, BE042688, AI686932, BE312581, BE410762, AW162688, BE889545, AW732580, BE259418, BE280838, AW239365, BE786848, BE730179, AI859074, BG165376, BE745146, BF973581, BE892306, BE278353, BE903782, BE537822, BE894698, BE408288, AI827029, BE731591, BE264718, BE278656, BG171566, BE729155, BE382475, AW088539, BE410055, BE280641, BE561790, BE389305, BE264296, BE207138, BE781234, BE268384, AW182681, BE273006, BF683749, BE612624, BE881070, AW936952, AW372205, AW245781, BE889017, AW732121, BE312928, BF315182, BE879144, BE259589, BE892544, AA872184, AW162793, BE293217, BE391848, BE795868, BE879296, BE387240, BE313689, BE514299, BE881942, AW662171, BE262670, H95242, AW245685, BE789540, BE391917, AI205206, AA769657, BF689380, BG116714, AW960376, BE263047, BE734033, AA621968, BE903443, AW733017, BF304602, BE207893, BE907060, AW474983, BE313043, BE785738, AW364257, BE894614, BF724479, BE279176, BE900672, BE280965, AA306149, BE390588, BE537388, AA604299, BG253168, AI922686, AI991237, BF980089, BE298109, BE261481, BF571545, W38423, AA847164, BE388920, BE410280, BF308038, AA748445, AA838044, AA583014, BE543342, AI392827, W60953, BE261601, BF686413, BE206533, BG164099, AI689260, BF984648, BE540468, BE206647, AV717882, BE259789, BE278815, BE620928, AI379636, AL045207, AA614311, AI375377, AI452850, AF100752, M30143, U11760, Z14044, AL137377, AF122048, AF313485, AF313486, AC005259, AC004472, Z70768, AF122047, AR038863, T49430, T39608, T39610, T40697, T49431, T91991, T92075, R00570, R00674, R12889, R16317, R17166, R17919, R18012, R21041, R34226, R35552, R41283, R41394, R43263, R41283, R41394, R43263, R69121, R69240, H10384, H10590, H15663, H17419, H17418, H60450, H60497, H83595, N31466, N44274, N51210, N72512, W17051, W40215, W44751, W45437, W52648, W58732, W67761, W67741, W72214, W74143, W77958, W80752,

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HPRSB55	641	1031451	1 - 2118	15 - 2132		BE740238, BE396502, BG121152, BG166305, AA725894, BE856956, BE560549, AV725381, BE788322, AI151174, AA725843, AI796778, AA631182, AI684470, AI758791, AA307128, AW517402, AW950147, AW402321, AW873141, AI131094, AW082953, AA282254, BF836375, AW629203, BE042724, BE042802, AA456796, AW593026, AI810099, AI554493, AI589210, AI681923, AA476490, AA811682, AI034159, AI005154, AA429074, BE514170,

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HKZAT03	662	1038378	1 - 1603	15 - 1617	AI792181, BF568681, BE619353, BG120390, BF342481, AI401034, BF568988, BE789895, BF732947, AI767382, AW006326, AI355164, BF338223, BE045924, AI285633, BF591104, AI867456, AI887701, BE785287, BF594321, AI521603, BF568589, AI281806, BF594332, AI569158, AW469163, AI638344, AI201771, AI733579, BE042478, AW193431, AW083891, BE502258, BF674772, AI672802, AI952107, AI916027, AW263735, AI924871, AI655323, AI677970, BF941149, AI970251, AI347252, AI564712, AW089701, AI539116, AI420801, AI916004, BE620014, AI672004, AW290972, AI247014, AI680300, BF438612, AW629833, BF196599, AI281880, AA602320, BE857125, AI571084, AI560534, AI920823, AW194360, AA558959, AI655096, AW089651, AW593434, AA583786, BF877451, AI886225, AA838252, AA583313, AI910048, BF036691, BF875572, BF588571, AI962356, BE939501, AW378134, AA653417, BF839820, BF898669, BF809758, BF834908, AW748237, AA102207, BF884829, AI950970, AW272114, AW087229, BF880457, AV688379, AV693534, AV693525, BE001970, BF827682, AV689604, AV692641, BF829604, AI081643, BE939633, AW177785, T29204, BE078144, BE618452, BF664598, BF878235, M63193, U62317, M58602, and S72487.
HDQMA85	663	1038717	1 - 342	15 - 356	BF978123, AU126584, AU128622, BF978806, AA495935, AA418533, AV711446, AA193327, AV710174, BE566462, BE892207, BE569126, AV650111, BF208049, AV655570, BF571579, AV658440, BE566177, BE380088, BF207671, BE564660, AV659224, AW953008, BF126703, BF681495, AV706080, AA136159, BE568578, AA365223, AV717432, BF037095, AV706188, BF969419, BF027969, BF678845, BE294140, BE819432, AI557092, BE315019, BF542097, AV716266, BF104989, BF207827, BE565709, BF131739, BG167404, BE894162, BE565661, AV731171, AA150864, AV730529, BE568671, BF691161, BF674527, AV705301, BE569149, AI525586, AV702978, AA421976, AA314967, AW607134, AV707255, BE566620, BF572994, AV723383, N79705, H24621, BF675294, BE568676, BF031287, BG168685, AV710104, H49331, BF207548, W01244, BF031139, BF573093, BE618995, AW804379, BF132984, BF030537, BE971095, BF028510, BG167791, AV705177, BE005667, BE568441, H83043.

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HVCCQ82	664	1038718	1 - 960	15 - 974	AV711446, AI810249, BF969419, AI146338, AI553922, AA629296, AI819787, AI220117, AV706188, AI961682, AV659224, AI857837, AA418533, BG167404, BG167791, BF035310, AI888793, BF038148, AA929054, BF037095, BF339479, AI718455, BG179179, AV731171, AV702978, BE564660, BF032642, AI749637, BE380088, AI814264, AW166965, BE894162, BE064379, BF104989, AU128622, BE892207, BF978806, BF207671, BF028516, AV710725, BF207827, AW439768, BF031139, BF027969, BF976854, BE568671, AI560688, AV705301, BF572994, AA928210, AI304964, AV655570, BE819432, BF027792, BG168907, AV650111, BE867757, BF691161, BE005667, AV658440, BE005665, AV710174, BE866538, BF675491, AA418380, BE005609, BE315019, AW571549, AV717432, BE005612, BE974177, AI400738, AV723383, BF037132, AV706080, BF031287, BE565661, BE568676, BE568525, AA887452, BF571579, AV707255, AV716266, BF542097, BG168685, AA493733, BE566620, AW471079, BF675211, AA991294, AA421976, AI089943, AA629674, AA193327, BF028510, BF207548, BE565709, BF594181, BF674527, AW950043, AV700927, AI218371, BE618995, AA629649, AA194110, BE926908, BE926907, BF573793, BF132984, BG180562, BE926888, BF196688, BE926886, AI198508, AA126514, BE176759, AV705177, BE176757, AI073726, BE568441,

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HTGFP54	665	1038915	1 - 515	15 - 529	AW379160, BE179734, BF753109, BF919364, BF590555, AR086625, and AL080156.
HBODF41	666	1039017	1 - 4077	15 - 4091	BE693712, BF726185, BF941211, AI609957, BF434424, AI133086, BE743297, AI818455, AI963505, BG035390, AI283400, BF000643, AI807136, AI540580, BE710218, AI923919, AW511536, AW961955, AI673369, BE709764, BE299414, BE938907, BE297587, BF941386, BF083301, AW949326, AA936302, AL119560, AW028717, BE092064, AA838701, AW192115, AW297210, AW467440, W77767, AI246894, AW389733, BF083304, BE764961, AI570849, N92501, BF882462, AI168120, AA262479, AW367902, BE815293, N34800, BE932159, AW085775, AA195510, H97700, AW368180, BF854061, BF882455, AW368217, AI768309, BF822787, BF516377, BE392838, AA417905, BG005722, AW372530, AI334431, AI400483, BF847440, AI580089, BE744768, AW368048, AW368218, AW368174, AW368042, AA131826, BF447574, AW368025, AW368163, BE714741, AW368040, AW368044, AW368047, AW368168, AW368170, AW368212, AW368215, BF349645, AW368045,

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HRODW53	667	1039068	1 - 2522	15 - 2536	BG109975, AU119642, AW967929, AW195340, AW444826, AW976269, BF433231, BF447675, AU158960, AA947277, AA722891, AW009448, BF055991, AI420841, AA256747, AW377666, AA731773, BE503026, BG055294, AI565025, AI927332, AW389598, AI336337, AI494131, AA808216, AA947279, BE222247, AA825545, AW452410, AI651452, AW292860, AW377657, AI867450, AI216219, AI243363, AA812208, AI573209, BF108712, AW367969, AA908226, AW367976, AI458531, AW389617, W93316, AW079969, AW002549, AI467887, AA749144, N24875, AA256877, AA262505, AA766428, AA811313, R83301, AA778771, BF111381, BF542145, AW965704, AA682799, AW183953, BE047426, AW243205, H58733, AA931058, AI246223, H69591, BG002169, AA973454, R83395, AA419509, H69785, N36294, AA299701, AI803225, AA299702, T03865, AW471034, H58344, H75668, H59592, AA812777, BE710950, T77893, AA411001, AI825279, BF759989, AA354797, H65620, BE710953, AA677816, H69023, AI886081, AW296622, AA255868, AA255471, AA648958, BE705831, W93427, AW183272, AI203101, AA815060, H65619, H67272, AI218105, AW811839, H59593, Z38443, F05460, BF909126, AW798987, BF909992, BF909906, BF909207, BF909130, BF909585, AI634666, BF909216, BF909121, BF909974, BF957214, BF909575, BE788762, BE181731, BF909165, BE930530, AI208005, AK000399, AL161757,

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HPAMC60	668	103929 0	1 - 2977	15 - 2991	AL535865, AL516512, AL519227, AU141054, AL516511, AU126040, BF967988, AU137295, AU142956, AW963033, BE788012, BE889992, BG035178, BG027055, AU117071, BG258905, BG261070, BE061938, BG258982, AV702215, AW274900, BE217870, AV759936, AW959659, BE540470, AV696955, BF686672, BE538326, BE549733, BF999549, BE549916, AU146938, AV717743, AI160190, AI264123, AA775397, AA902465, AW408479, BF381555, AV753562, AA845453, AI567675, W19918, AI371771, AV714671, BF237716, AV705505, BE707637, AU143994, BF033922, H98061, AI129280, AI436219, AA131605, AI337194, AW750293, BE252519, BG025834, AI808533, AA165080, BE813720, AA314539, AI762629, BF243023, BF059565, AA824288, AV751773, AV763024, BF476697, BE002625, BE466846, AW339504, BE870697, AW172809, BE002808, BF306735, AI028509, N78438, AA165100, AW438902, AA702977, AA934039, AA772387, AI305175, AI969645, W31697, AI079414, AI140124, W32150, W00679, AI298102, AI298271, BF244067, BF746273, AA533788, N78878, AI818253, W56864, BE669492, AI468435, AA227473, AA150886, AI082614, AA888217, AI079958, N90337, AA316647, BF967264, AI083708, R19848, AW075617, N99923, N62347, N90737, BF216915, AI081307, N33210, AW513369, W39443, AI051901, N22977, AI128862, BE252097, AL526658, BE960874, AI366857, BF195491, AI968452, AI093068, AA488414, AA625429, W03474, AI767826, BF886626, N62714, AA844432, AI510771, AI339129, AA977275, AA917896, W77845, AI018089, AA808772, R23594, AA488552, W05350, W06854, AA558790, AV710092, AI590102, BF431526, W15351, AI560407, AA863422, BE671096, BF665098, N79109, AI086695, AV749542, AI246615, AV759463, N99916, W72121, AA226732, AA767460, AI220982, W06941, AI382792, AA844288, AU157116, AU155983, T59679, AI278098, N40268, AA456488, H09416, AI863558, AI300271, R71572, BF031544, N31015, R78812, H95034, AW205368, H78637, AA164685, N41923, H09357, AA854381, AA700449, H96313, R26150, BE925306, H06438, AW901748, AI669872, R77046, N91264, AA725325, R81582, H93997, AI090659, R79310, BE167655, R34212, AI186457, AI470782, AI591349, R79674, T85462, T99588, R81331, AI985095, N55580, AA369712, BF738882, AA009877, Z41909, T82168, T71401, AA708919, T83949, T50395, AW518427, T30640, N32393, T52657, AI191207, AI382962, N90421, R76884, AA164538, AA670114, T71267, AI572199, W32002, BF242166, AA876634, BE180993, AI719049, R30987, W25298, AI917594, BG011640, AA724702, AF121856, U83194, AK021456, T52656, T59815, R08686, T85364, T85403, R34329, R45949, R45949, R79863, H06174, H78585, N63268, N69012, N77082, W25292, AA131531, AA150778, AA738250, AA948725, C01143, AA094683, AA678747, U48336, AI042230, Z38204, AI678470, AW137248, and AW198143.
HLMHM83	669	103949 1	1 - 1224	15 - 1238	BE794192, AI986229, AI290806, AW084755, AW341433, AI246657, AI347940, AA543086, AI222741, AI190369, AI697075, AI697244, AA429265, AA916401, AI283197, AA428446,

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HOUDK70	670	1039538	1 - 1597	15 - 1611	AL526552, AL529569, BE300326, BF343474, AW173245, BE907221, BF526703, BG117100, BG118993, BE731203, BE536398, BE563511, BF307443, AW748479, N36307, BE789360, BE297472, BE737167, N31152, AL039679, AI911101, BE884203, BE734924, AA447600, AA447576, AW894544, AA448099, H49186, AI940110, AI752657, H05170, BF764050, BF750545, H58569, AA448075, AA157923, T08301, N42794, AW607899, Z19259, T10191, Z45841, F12064, BE247381, BF088793, T66334, H54538, N40492, AA376319, W20031, BE244355, AW238940, BF921416, AW843056, AA345246, AV689784, BG168733, BE247386, N26944, AW604060, AW843060, BF303785, BF885765, AA345389, AA789333, AA339151, AI492232, W30828, AV660518, BE909958, BF935407, BE870969, AA099601, BF969573, BF917262, AW366426, BF757047, AW607378, and AF091083.
HCYBI10	671	1039579	1 - 1702	15 - 1716	AW962356, BE882875, AA446378, AI912345, BF686233, AA903395, AA305361, AI262837, R51262, AA325695, BF756552, AA502360, BF436343, AA341377, AI383206, H95839, BE926588, AK025718, AF078165, AF205888, AF205889, AF017757, and A98521.

HMEFK29	672	103965 2	1 - 1038	15 - 1052	BF855430, BF856260, AI097372, W76417, AW351543, W72789, AI497996, AI201242, AI239673, BE504020, AI125890, AW384017, W94549, AW204883, AA063004, W81183, AI359730, AI698103, W92622, AW665053, AA075526, BE671677, T58604, AV705531, BE780808, BE503247, BE505011, AW955391, BF743760, AW050613, AW135973, BE908855, BF056323, BE551179, AI871753, BE549759, AA075583, AC002398, and AL137752.
HAOSK79	673	103966 3	1 - 756	15 - 770	BG032338, AL525292, BF796384, BF692056, BE745991, AV716068, AI569781, BG029520, AI052735, BE893878, BF797308, BE888132, BF979000, BG178102, AA781104, AI571797, BF976824, BG256579, BG104520, BE544942, BE865636, BG029828, BF035701, BE261824, AV760223, AV757406, BE564641, BG117456, BG030351, BE899066, BF103712, AI598181, BF687712, BF984230, BF184810, AI870484, BG032825, BF695460, AW957275, AW874587, AW515957, BE866479, AI073718, AA203476, AW575580, AA781338, BE895698, AA706787, AA436999, BF571031, BG030598, BE894780, BF185164, AA081272, AA007621, AI187853, AA075073, AA007646, AA705320, N93408, AA039876, BF516104, AI037954, AI970768, AI192508, AA861023, AI140876, AI698655, AA081273, AA405947, AW272792, BF694018, BG034515, AA041520, AA812948, AA442827, N93319, AI362866, AA075235, AA476952, AW261964, AA074947, BE904476, N53693, AI302602, AA992412, BF685238, AA405385, AA033949, AA075247, R83062, AL525252, AA430032, AA477063, N55467, AA555210, BF036251, H64056, AA772482, AA287547, AA430241, BE184054, AV758639, BF983295, AI445235, AA764752, AA287855, AA780128, H58693, H94652, AA960936, AA314652, H52308, BF218627, AW023686, AW750100, H90483, AW082280, AA627719, H77520, H77519, H60872, R70335, AA055312, AA055311, AA404964, AV734433, AI338258, H60873, H58303, H67960, AA644227, AI185954, H67633, H66113, AA693507, N73057, H64006, AA405133, H66067, H90427, BF979261, N51912, AA286786, AI933075, AI811894, H82677, AA806062, AA287854, R93232, R93114, AA380236, H82417, H52544, BF965661, H67910, R83011, BF037529, AA352192, AA287672, AW750040, N23584, AI498735, BE391888, BG105162, AA383595, AA249470, H70200, C21248, AI910658, AW796237, AW957287, N76842, BE328455, AA033896, AW602820, AW404603, T25511, AW796097, AW796134, BE972716, BG032865, BG033115, AW796271, BE540031, AI346766, BF033757, AF095287, AJ223953, AF075242, AF062649, AF200720, AF200719, AF095289, AF179298, AF095288, U73030, AF116538, AF071209, AF167561, AF167563, AF167564, AF167560, and AF167562.
HPDRV42	674	103968 9	1 - 1739	15 - 1753	AL533202, AL535156, AL517887, AL533596, AL519304, AL531833, AL513982, AL531770, BE799237, AL517032, AU117426, AL533161, BE797596, AU123247, AU141035, BG163895, BG109757, BE396435, AU126498, AL517886, AL045490, BE799456, AU123454, BF038993, BF984427, BE881609, BE905177, BG034215, BF793209, BE871282, BG122256, BE905819, BG168462, BE879496, BF340027, BG165885, BE745016, AV694660, BF968093, BG167333, BG121075, BF526083, BF526778, BF917367, BE269926, AW168896, BE158012, BE407984,

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HOPJD35	675	1039703	1 - 2687	15 - 2701	AU130672, AU118875, BE741906, AU130252, AU132148, BF182993, AU123320, AU132352, AU138796, BE778256, BE780163, BG169282, AU139031, BE616414, AW027586, AV718137, BF973967, BF700458, BE784615, AU129813, BE890390, BF315440, BE272979, BE616667,

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HTFNP84	676	103974 8	1 - 1470	15 - 1484	AU131060, BG170335, BE874646, AW965920, BF103784, BF132717, AI916675, BE542516, BE545072, AU126699, BE925786, BE542794, AU153996, BG249086, AU128730, BF688040, BE871409, AU133302, BF695692, AA172248, AA279942, BE565526, AU118039, BE696974, BF754790, BF028759, BE865874, AA301103, BF978940, BE141444, BF669829, BE563965, BF185183, BF211791, BF216245, BE005656, BF758436, N85422, AA327978, AI540751, AU127595, BE080860, AK001323, AK023267, L11316, and AL137710.
HTHDT76	677	103987	1 - 1794	15 - 1808	BE547763, BF879014, AA150271, AA150373, AI148532, BF223784, AU135981, AI038383,

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HSYEC21	678	103989 1	1 - 4229	15 - 4243	AU127302, AU123126, AI337321, AW088492, AI984023, BG105936, AI989481, BG115461, Z99413, AV752874, BG164521, AI830368, AU131231, BE046108, AW951238, AW593926, AL134557, BG259862, AW631373, BE328781, AW851082, AW029158, BE789679, AW961129, AA442913, BF793879, AW663665, AW022139, BF432072, AI434336, AI436090, AI809757, AV682735, AW768573, AW439527, BF083068, AI913448, AI440089, AI341304, AV718717, AI190267, AI147127, BG025485, AW613371, AI795941, AI765979, AI216333, AA578569, AI570253, AW235152, AA760815, AI056839, AW439931, AI215415, AA732638, AU153007, AA927068, N29456, AW190061, AA041498, W95177, AA761960, D82513, AI358433, AA776029, BE326691, D82515, AI033177, AI752749, AA262804, AI204230, AW192067, H15877, AW083388, BF750393, BF217438, AA397563, AA026006, H14766, W94597, R51526, AI859270, BF223414, BF431093, AA806627, AV655427, AA781883, BG178000, H43399, H73767, T28485, AA731599, T79974, AI718564, R53656, AA134349, BE156349, D82467, AV657727, AV657350, AV657690, R11928, R53074, BE702241, W58753, AA025218, AA593057, R51525, H74151, BF114660, R15295, N41480, BE875554, H98205, AW954282, AW959453, AW182028, AI863791, AA134348, H47642, R93603, Z43506, H43344, AA041264, BE537020, H29807, H47947, AI370277, D82386, AW842224, AA300686, R02057, BF085644, F05667, AI695688, R25259, AA279606, R41222, AA934641, R14900, Z38623, R02056, T29666, W05800, AW892808, R93604, AW363232, AL039132, AI750184, AV736213, T29285, M86031, H98204, AI926218, AI470448, BE143058, BF541917, AA385114, N72769, AV686989, AW961122, BF818257, AL526144, BE698943, BG027822, AA828877, BF213906, AA096386, AV689120, AI865601, AI865462, BF085643, R53163, J04027, L14561, M95541, M95542, X59069, AK027053, X53456, AK024895, J03753, AF070606, S49852, AF287015, L08769, AF076783, L04739, I58000, AF216705, AC007314, M25824, and AW083471.
HKGCO25	679	104038	1 - 738	15 - 752	AU123678, AU118105, BG027584, AI207407, BF974367, BF973516, BG259718, AU123965,

		4			BF970434, BG107244, BE258547, BE890404, AL517860, BE388162, BF795164, BF967682, AI749737, AA642209, BG107118, BG180133, AV714261, BF345922, BG113295, BE693758, BG109498, BE621536, AI888672, BE693776, AI890575, BF684142, AW148801, AI985751, BE536158, BE881387, AL514074, AA910996, BE617523, AI613444, BF979991, BE926491, BE748880, AW975867, BE562442, AW026187, BE937234, AA463350, BF331308, BF968677, AW089874, BF132803, BE876493, AW275808, BE544407, BE536798, BG026464, BE548933, AW938112, BE873276, AI591115, BE693771, BF308468, BG112808, BE544105, AI872463, AA504731, AA160284, BF132989, BE220696, BE831633, BE870812, BF668540, BG107584, AA581366, BF214198, BE936474, AW022247, BE547171, BF663192, BF975564, BF975670, BF203848, AA613926, AL513773, W68381, AA974654, BG177005, BE737461, BE302403, BF818218, BF437323, AI474126, AW270729, BG109180, AW362917, BE737992, BG024211, BE965760, BF664447, BE790101, AW362904, BE302131, AW263998, AI811519, BE464955, BF753084, BF238891, AI608766, BG110891, BE926527, AI635182, AI935294, AA176782, BE540256, BF753077, BE737233, AW731699, BF348922, AA632813, AW673875, BE536682, AU144908, BF669831, AI978716, BG116086, BE973542, BG026168, AA169276, Z21160, BG116026, AI862701, BF685146, AI689671, AI952720, AA947935, AI955286, BG252078, BF031533, BG035221, AU145014, BF211510, AW316556, AW360809, BE464960, AW674649, BE018843, BE328642, AW360824, BF030655, AA676616, AA127472, BE886218, AL120666, AA329338, BE208259, AI017431, N67918, BG115524, BF969523, BG027922, BE466268, AA836769, BG034243, AA463858, BG113511, AU139343, N85166, AW581985, AI916464, N63379, BE328499, AW673547, BG026114, AA947854, AW664200, AA411497, BF570086, BE747462, AI079789, N81179, AW518369, AA195437, BF803130, AA357441, AA101058, AI707664, AA774179, AA554566, AA968507, AA384381, BE734254, R48491, AW089246, AA205970, AA857683, AI917908, BE895969, BE541178, AU130863, AI953530, AA360799, BE277894, AL532923, BG109514, BF664321, BF671105, BE880035, BF095020, T50269, AL517861, BF377618, T93704, BF811881, BE882033, AU145687, BF804799, BF804803, AF202360, AA366107, AF202359, BE939042, BF095042, AI344757, AW401448, AU155967, BF796383, AA102460, AI073573, BF971137, AA331446, AA329105, BE733637, AU145684, AA102519, BF735362, N87331, BF447744, BF900479, BE170370, AW392261, AW379724, AU118697, BF811854, AA857682, AW129671, BF664492, BE350637, AA422160, M86667, AL162068, AX015397, D12618, AF062594, X61449, AF114156, AC006157, AL135818, and AL133153.
HNOJN70	680	104038 5	1 - 2976	15 - 2990	AU119071, BF966048, BG166677, BG119979, AU128779, BE893615, AV681724, AU129282, AW950481, AV703640, AV704484, AI972815, BF000482, BF794196, BE889106, BE536036, BE537475, BF700163, AI954186, BE886104, AI693320, BG236249, BF675355, BF240902, AU151441, BE552164, BF029979, AW880628, BF594114, AW172716, BE326343, AI480116, AA772153, AI693385, BF688083, AW974556, AW512084, BE048759, AW965923, BE644644,

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HADFS31	681	1040388	1 - 3839	15 - 3853	BG163477, BF970569, BG108453, BG054547, BG113286, AW854245, AI307808, BE073174, AW611910, BF056065, AL533547, BF672443, N41320, BG171055, AW954910, AW959075, BE644771, AI703292, BE872388, AI469372, AI566092, AA602303, AA393055, BF030410, AI445560, AA131931, AI951484, AI972988, AW085169, AW341588, W01556, AI494498, AW387794, AI911847, AW451929, AI141578, AA131930, N39095, AW073488, AI560000,

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HJBDC89	682	1040569	1 - 1435	15 - 1449	AW953446, BE792468, AI051989, AU128893, BF220324, BE549353, AW956873, AW009905, AV751585, BE251103, BF973368, AI310510, AA703004, AV751891, BE973862, BF033333, BF197271, AA910262, BE266993, AW411419, AA890707, AI339233, AA887323, AU151115, AA306175, AI200470, AI033882, BF035058, AA641095, AA652477, AA679821, AA593627, BE883034, AA082991, AW675300, AL157587, AA083148, R52335, BF087892, BF197102, T64853, R52334, BF674548, F09900, T08457, AI719735, AA356384, F12274, BE874556, BF444928, R94927, AA580037, T72595, AA652284, AW473407, AA309035, AI721010, BF525686, T08456, BE168731, R95011, AA593585, BE164522, AI358215, BE169297, AA588306, AW815166, AW815109, R21419, AW167476, AA506721, AI984330, AA642882, AA933907, F09641, AI984620, H17612, AV725813, BE380051, AL135371, BE886923, AW439106, AW953295, AV722866, AA862969, BG163790, BF212074, BE870915, R37033, R66798, T65164, BE566121, F15256, AW815164, AW614319, BF064228, AW001817, AA724375, R42976, AI092698, AW338411, AA365565, BF431158, AA365564, AI767448, BF739231, AW959721, BF221927, AA889202, AW815163, AW501169, AA350822, AA593964, BF954327, BF090088, BE160156, AW795832, R48126, BF960610, AA779908, AA045537, D86724, U82256, U75667, AR018045, AL049779, U90886, AF032466, U90887, AF045964, and AF045963.
HTAIX75	683	1040591	1 - 756	15 - 770	AL520854, BF128615, BF525816, H48321, H17689, BF376847, H17759, H09891, BE830948, BE830958, BE830973, AL524180, H09234, AL524181, BF999727, R12299, Z42268, AL520853, T85877, Z41861, BF829713, BE705874, AW351575, AW375132, BF772521, and AK024423.
HODBO29	684	1040620	1 - 896	15 - 910	AI885067, AI688253, AI570457, AV764603, BG163869, T16332, BF309856, AW406353, AV690861, AV690628, AA227293, H18458, R35332, BE260548, AA151176, AA161419, AW404488, AA243390, R58860, BE312401, H29205, W80943, W02919, BF541769, BE741045, T34002, H84560, AI572320, W32649, AI907827, T16948, BE246518, H18566, AA447824, AA113191, AA126138, AL008726, X86032, AF014404, AR016567, and AF124264.
HOCOF27	685	1040631	1 - 851	15 - 865	AU118514, AL046707, BE018880, BE336668, W92272, AA778077, AA280361, BG035941, BE791807, AV686562, AU119701, AU117950, AA367397, AA476844, AU117738, BE378986,

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HSPSE88	686	1040694	1 - 1201	15 - 1215	AL522502, AI580032, BG167858, AI814672, AI523542, BF085511, AW248591, AI673372, AV717115, AW249030, AA706791, AW069122, AA552495, AW009843, AI887757, AA702426, AW967585, AL522483, BG119838, BF084804, AI819028, AI769618, AW004998, AI003971, AA004715, AI767828, D51209, AW028878, W52965, AW514974, AA769293, AL525127, AA837168, AI285801, W25980, AI039059, AW771651, AL525128, AI311076, AW602162, AI869745, AA677218, AI813376, AI567875, AA618513, AI022994, AI052487, AA854146, AI266735, AI301548, AI832231, AI290695, BF084849, AA480013, AA934722, N26737, N20194, AI075621, AA668848, AI336515, BE139312, AA250959, AA670215, AA005144, W60442, AI336632, AI344914, AA705145, AI254375, AI590516, AI963828, AI318582, BE139400, AI583883, AI420764, AI590506, AA084523, AA483679, AA214591, AA250936, AU157618, BE857751, AI318600, AW407012, AW088623, BF002850, W26823, C06455, AV735834, AI241622, AI886710, BF055934, BF735232, AI318622, BF054864, BF718700, N29095, AW075037, BF055923, BF718706, BF718780, BF718679, T31522, AI250134, F29530, BE090812, H50863, AW023092, AW271291, AV745255, BF818430, AA856884, BE827076, Z30135, AV745621, AV686960, BG105965, AV688067, AV745595, BE708176, AV746034, H65158, AV750475, H50864, AV745496, T16485, AV745590, H53754, BF340024, H53806, BE905806, AV746420, BF813703, BE465282, AA120927, AV745583, AA385893, AV745257, N34624, BF346625, AV740255, BE258692, AW953410, AI675235, AL036612, BF084807, AV746037, BE905887, H65110, AI796558, BE905886, AI929637, AV745706, W28921, AV736646, AV737270, AL522501, AA309808, AV745991, W28285, BE764455, Z24835, T30568, AW189684, BF346696, AU138453, AA577951, AW189724, AI470855, AV739283, AV735293, BE092913, BE092992, BF332686, AW304361, AV745534, BF303636, BF332689, BE092904, BE775213, BF791676, BE139142, BF085484, AA367501, BE092923, BE645740, AW071427, AA211065, AA478966, C01872, AI281641, AI828980, AA811793, N55933, AW271045, AI280091, AW118844, AI583843, BF677954, AA742247, AV745203, AI902771, BF130510, BF818366, AA804918, BF754682, AW019940, N86733, AA199628, AI000664, AW613495, AV745710, AV646906, AI500514, AI537643, AI537677, AW168406, AW051233, AA583730, BG029829, AV747873, AW075484, AI872555, AW162194, AW073996, AI621341, AI352326, AI540759, AI927233, AW827289, AL514973, AI469801, AI470648, AI540674, AI573167, AI254341, AI589428, AI700159, AI564448, BF033296, AI620810, AI859991, AI590020, AI225000, AL513913, AI758309, U82130, AR040684, AR070431, AR040683, U52945, AF060867, AF060868, X82319, AF260436, AL359620, AL157480, D00174, S36676, AF113694, I09499, AF260566, AK024533, AK026021, AL137560, AB044547, AB047930, AF177401, AL389935, AL050277,

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HSKXM78	687	1040826	1 - 858	15 - 872	BE778880, AW816011, BF959875, BF512759, BE697738, AW994684, BE697734, AW993955, BE879998, BE697706, AA248841, BF836641, BF902690, AI251783, AA196706, BF904841, BE843972, AA337691, AW805127, BE925951, BF092498, BF900617, AA393948, W87655, BF376916, BF954313, BF960296, BE938584, BF768665, BE886093, AU125354, BG031978, AA358761, BF920575, BE084190, BF885474, AJ242978, AK001550, AK025060, AJ132702, AC008114, and AC007551.
HNLMB92	688	1040913	1 - 802	15 - 816	BE395284, BF688969, BE619433, BF688497, BE619955, BF034699, BE793692, AU132971, BE394828, BG251090, BG036941, W80994, AV701506, BE407112, BF972848, BE265852, AI879010, BF725090, AI929509, AW954089, BF316261, BG117117, BF970435, AW161416, AV721738, BE728687, N56607, BF183092, BE392873, BF205782, BE274940, BE385584,

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HE8ON57	689	1040925	1 - 564	15 - 578	AW016248, AW027466, BF110174, AL537615, BF205424, BG163867, BE294995, AV685072, AV694867, AL532813, BF791966, BE280531, BE019871, BF689588, R58479, BF683953, BE252149, BE745812, BE538062, D80087, AW376826, AW376819, AW848374, AW376824, AW848735, AW848234, H11901, AW578354, AW578356, AW848720, BE274355, BF969663, H58623, BE008928, AV707901, AW377761, BE543151, BF881008, W21607, T59768, BE392889, AW849075, BG105010, BE742244, T61979, AA150795, AA318803, and AK026004.
HOCOC14	690	104093	1 - 1639	15 - 1653	AL518928, AL518929, AL523989, AL522922, AL520654, AL530234, AL525704, AL524660,

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HOGDP49	691	104104 9	1 - 1506	15 - 1520	AL520398, AL520397, BE781402, BE562860, BE779878, BF338078, AW957700, BE887964, BE895896, BF980871, BE382512, BE407804, BE901552, BE393549, BE904389, BE551136, AA708831, BE910201, AL525080, W72758, BF057572, BF436823, BF223668, BE272529, AW977090, BF589763, AI659008, BE256374, BE780025, AI694894, BF111938, AA528686, AI097639, BF447767, AW135277, AI306571, BF663658, AI347268, AA806250, BE674395, AA737822, AI435032, AI264112, AA806253, AI355674, AA764791, AI270461, AA629351,

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HOFMK22	692	1041070	1 - 346	15 - 360	AU133809, AW247757, AW631437, AU141780, AL516064, AW995203, AL535497, AW239330, AL538255, BG115014, AA211149, AW249015, AU126504, BF093036, AL538002, BF149177, AV741584, AV738583, BE934466, BG002637, BE934447, BE293898, BG107041, BE788850, AW361739, AI557500, R18319, BG024330, BE260462, BE383537, AU117400, BE799981, BF844517, AK023310, AF161479, AK023927, AJ238379, AK001316, AL109840, AC010102, AJ238742, AJ238741, and AJ238743.
HBGNT69	693	1041900	1 - 796	15 - 810	AI624015, AI806163, AI761336, AI239973, AW014766, BE464659, AA977211, AI674651, AI148345, AI866649, BE645052, AI125625, AI086758, AI128040, AI655162, BE551928, AI161332, AI655161, AV753160, AA610185, AW236531, AI292283, AA292277, AA477646, AI690722, AA394127, AA609466, BG059648, AI190454, AI018185, BF593539, AI829500, AI700453, AW316589, AW196672, AI074772, AW341618, AW167322, AW302218, AA025586, AA838081, AI024041, AI041061, R87527, AA902915, AW594410, H14071, AI204603, H51531, AI750779, H14072, AI190999, C02480, AI671151, AW025750, H66637, AW960210, AA113917, AA377473, AI825064, AI970416, AA058796, AI203054, AI242978, W23707, AW341710, AW769637, W35307, AI567190, R11213, AA278295, H39857, AA359315, AI123865, AA293310, AI128283, AA339310, AA025710, BF934944, BF935648, AL047028, AI078227, AW604820, BG006575, BF725867, BE175407, BE175410, BE312886, AL048445, BE260545, AL096870, I38154, L41066, AF283284, and AF309389.
HSPSI42	694	1042462	1 - 3700	15 - 3714	AL537329, AL535764, AU125011, AL528428, AL533752, AL535576, AU125456, AL516645, BF026718, BE745954, BE792053, AA630332, BE740049, AU141066, BF034894, BE903114, BE742121, AI201168, BE740144, BE735567, AL516644, BE378821, AU125164, BE563488, AI937247, BE898530, AU124908, BE619144, BF967935, BF688475, BF311849, AL528122, AI279435, BF316813, BE792504, BF026094, BE746069, BE906552, BE561254, AW857789, BE798640, BG033830, BE383120, AL518988, BF974657, BF348245, BF796308, BE304685, BG260649, BG115158, AW363807, AU125397, AI951762, AI923289, BE561374, BE262515, BE734666, BE784840, AI956069, BF026686, BE292907, BE884663, AA769147, BE897193, BE747627, BE613524, BF971971, BE546212, BE389493, BE613370, AV656237, BF034293, AI499201, BE386001, BF975490, AA218856, BE799774, BE882271, BE885327, BE870012,

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HOCPK85	700	104335 1	1 - 1204	15 - 1218	AL522398, BE379481, AI684596, AI806645, AI740521, AL522397, BF979808, BE676017, BF219893, AI806153, AI708422, BE385400, BG026011, BF967022, BE903619, AI459163, AI735380, BF686729, BE795411, BE792637, BE729653, BE796144, AI963624, AI765617, BF686098, BE378350, BE410801, BE387712, BE394936, BE563046, AI983340, BF790660, AW075958, BF103704, AW051428, BE387637, BE785127, BF796437, AI589173, BF981752, BF475777, AA576788, AW339112, BE903675, AA602549, BG180099, BE390336, BF791383, BE731101, BF527875, AA887659, BE799685, BE514640, BE905330, BE866748, BG031579, BF790445, BE388199, AI762362, AI937378, BE537734, BF210184, AI879981, BF979273, BE387838, BG180256, AW517324, AI140258, AV717051, AW675434, AA936513,

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HVVBM94	701	104353 2	1 - 1177	15 - 1191	AI675414, BE513230, BG165117, AW151946, BE005897, BF513409, AW949890, AI095584, AW298180, AW994567, AI871918, AU155489, AI377209, AA031514, AA975518, W52564, AI565078, AW189257, BE006124, BF326740, AW474563, AI922822, AI758884, AW469327, AA987674, AA908398, AI679314, AA908479, AW583104, BF821302, AA828906, W31903, W60256, W39266, BF752616, AA528246, AA977868, AI570763, BF820829, AI920871, AA970839, BG231217, AW338549, BE813072, AW997682, AI696789, BE003179, BE813073, BE814859, AI962006, AA344350, AA299556, AA910725, AA299411, AI219260, AI921665, BF748812, AW998873, BF834292, BF838850, BF089337, AA031513, AW998770, AA887197,

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HTPDM31	703	1044199	1 - 1342	15 - 1356

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HSQEK12	704	1044577	1 - 1601	15 - 1615	AV728991, BG036781, BE880112, AI651441, BE745280, AA290665, AI377906, AI359678, BG116384, AA131046, BF684270, AI350698, AV733412, AI028758, AA427498, AW183495, AA912192, AI830153, BG111354, AI992057, AA218927, AA430659, AA410335, AA610570, AA627352, H05065, T49443, BF002142, BF224112, T91189, BE671420, R14695, H00136, BE463643, AW135468, AA410296, AA130965, AA553723, T79798, T28097, AI214583, H85006, BE710453, T81103, AI650387, AI867239, R42417, T84697, BE706115, AI217867, T49444, T79163, D28588, and M97190.
HPDRZ16	705	104461 8	1 - 978	15 - 992	BE727770, BF974728, BE616013, BE798502, BE616088, BE313262, BE727926, BF206976, BE409735, BE385235, BE389159, BE393783, BE312072, BE313666, BE896298, BF316585, BE277120, BF793704, BF686570, BE616244, BE385956, BE383548, BE294388, BE901124, BG180846, BF036765, AI828083, AA496422, BE393805, BE294255, BG036931, BE615063,

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HVCBC44	706	104463 5	1 - 1177	15 - 1191	AL519186, AW419048, AA100804, AA121287, AI911097, AA502311, AI075431, AU128651, BF083756, AW089948, AW132123, AA100952, BE466029, AW083432, AA488316, AI990554, F28643, AU156613, AA741512, AA731380, AA731382, AA207032, W79581, AA731381, BF059144, BF059729, AI655521, AI655502, AI808218, W79780, AI970106, AA251012, F37179, AA262868, AW439007, AW589846, AW439035, AA730238, AI640142, AA329792, BE799812, BF813785, BE868398, AI559734, AW087255, BE791631, AW750380, AV704162, AA252138, AA242847, AV704313, AF226667, AK024070, AK023549, AK025654, U49385, AC004087, and AF086422.
HPIAC22	707	104471 1	1 - 2036	15 - 2050	AI924197, BG259817, BE268308, BE270476, BE042939, AI571743, AI467993, BE514280, AV705060, AI422722, BE397774, BF525749, BE269234, AI885549, AA001424, AI417323,

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HSODA53	708	1044741	1 - 1993	15 - 2007	AA488860, AW118663, BF679533, AU157678, AW968930, AA488937, AW502897, BF949789, H91281, AU138611, AI174822, BG251769, AI911406, AA319438, H13953, AV723659, AV723812, BF379751, BE781989, AI138991, AV724029, BF680401, AK024359, AC005495, and AF119885.
HE9ML74	709	1044760	1 - 2109	15 - 2123	BF973550, AV703947, BE735983, AI141536, BE177941, BF111296, AW960419, BF593246, AA716179, BE538079, BE672999, BE899473, AI638212, AI769556, AW972475, AI963758, AI761109, AW576535, N24244, BE502221, N49976, AI890512, AW607778, BF686370, BF061544, AA888851, AV727854, AI204229, AI492301, BF965554, AI399665, BE464401, BF906460, BG150554, AI684997, AA397545, AW452929, W58540, BF724940, AI308244, BE048924, BF957204, AW994200, AW167166, AI032858, BE541283, AI990115, AI191763, AV719539, BE813538, AI687674, AI356174, AW237523, AW237513, W05191, AA825680, AI628442, AW051464, AI955375, AA446754, BF934288, N45103, AI768999, AI623958, AW604370, AA844351, AW072581, AA877508, BF964485, BF326688, AW967467, AW272007, AI434348, AV649740, AI991466, BE813583, BF326690, AI367528, AI419248, AA757020, BE813608, AV649840, AI769025, AA112631, AA441882, AI990676, AW937758, AW885989, N31202, H12678, AI457681, BE176156, BE843670, AV709716, R53677, W58506, AA923689, BE086457, AA113334, BF438757, AI632857, N28982, AI917528, BE176253, AI357469, AA432070, BE176150, AI241039, BF091010, AA730921, AV691901, AI969586, AI391527, BE176080, BE176039, BF893922, AA630054, AA761119, H75496, R23846, AI584086, AW194837, H05294, BE813411, H05344, AA732634, AA305435, AA353992, AI244139, AA385220, AA513775, BF858939, AW999931, H98911, R63556, AA844045, D62444, AA251162, AA334217, AA441821, H68149, AA399063, BE001143, N74346, R12743, AW198016, BE001204, AI867622, BF963511, BE088866, R39795, AA251128, AW409654, BE088700, BF822863, N72430, BF339136, AI474839, AI499364, BE172967,

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HPDRB76	710	104476 2	1 - 3729	15 - 3743	AB005622, AL519058, AL513611, AL519059, AL529375, AL532483, AL525289, AL529374, AL526549, AB005621, BE274852, BF982898, AU125970, BE622992, BF796408, AL513612, BG106187, BG034879, AL526367, AU128506, BE897919, AU133789, AW968284, BF965878, AW409718, BE275712, BF791733, BE617862, BE789855, BG178771, BG258108, BE408698, BE896160, BF686705, W05712, BF309732, AI192372, BF694788, BG028726, AV688212, AV691606, BG033618, BE540959, BF679745, AI762781, BE617406, BF037845, BE885892, AI361029, W95848, AI089780, BF036880, BE785363, BF241381, BE301944, BF984223, AW192519, AI082053, BF195946, AW327951, AI683326, W02312, BE296841, AI217910, BE208446, AI423184, AW170457, BF948889, AI082059, AA315835, AA628941, BG120646, AI744437, AV653540, N39056, AI653453, W94951, AU150788, AI057594, BE782892, N36102, BF211911, BF432772, AW001561, N48248, W60626, AA789238, AI472150, AI183431, AI268418, BG106759, AI913193, AI625729, AV735137, W60627, BE909357, BE895991, AU154985, AI150225, AA029868, AW072811, BG030191, N73085, N31137, AI625935, BE468023, AI367260, BG178198, AI758701, BF211840, AI691042, AI968738, AW956547, BE785015, AA706232, AA873148, AA281272, W56310, AA831365, AW241427, N69937, AW241485, AA429410, AI436052, AA689532, AA774576, AW013970, N41726, AI129695, AA954718, AA429457, AI612726, AI337986, AI672852, AI188847, AI041266, AI024764, W42834, AW304081, AA857427, W76138, W23563, AA126802, AA259087, AW965470, AW514066, W05439, AI813834, W96133, BE858752, N98402, AA507981, AA745068, AA037072, AA121379, AW731880, AI018474, BF435085, W56456, BE694795, AA036958, AA598936, BF432261, H09730, AI018407, AA962630, AA773937, W56426, AW440750, AA043877, N39058, AA406074, AW058561, BF149112, AA824556, N44108, AU119157, N21122, BG057814, H10488, AW440768, AW996949, AI598269, AA112260, AA719556, AA781363, BF209642, AA315392, H20077, W60534, W56311, W60556, BE206569, AA877673, AL121231, W31644, AI949712, R81197, AW243211, AA628877, R87173, AW589397, AA602997, AI658880, AA825924, W56353, AA494332, H87565, AA629343, AI659961, AW167307, BE542553, AI339381, AW192520, H09696, AW193684, W96132, BF844933, BF239292, H93440, BG031200, N98614, H66652, H81871, AW883387, BF037979, W24238, R37464, AW884472, AA962473, AI079581, AA996224, AA825584, AI826389, AI420920, AI269305, AW080050, R53826, AA205450, AI159792, BF382871, AA599040, R48985, AV684456, BE833359, H01702, AA689475, H96126, AI199477, AA514855, AK023758, U54645, M16225, AF056332, D90280, AL035411, AL020995, U39945, U84371, AB020202, M16224, D90069, D13061, AL133249, AL121652, D90067, AF076633, E04317, AJ012288, AF055917, AF003737, T39695, T70955, T93340, T94018,

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HSYDI55	711	1044769	1 - 1576	15 - 1590		AU136917, BF205289, BE397937, AL531689, BG169850, BF975130, BE220494, AU138732, BE540278, AW954061, AW956739, AI796023, BF205443, BG171279, BF857500, AA164517, BG171303, AI699703, AI268056, BG166578, BE813909, AI265884, AV713795, BF447802, BE139089, AI458243, AW136662, AI472328, AI440050, BE500953, AI858271, AW511531, BE046481, BE503455, BF591012, BF195935, AI476281, BF222795, AI694704, AI445711, BF115624, AI610309, AI927962, BG166246, AW339786, AA971085, AA708922, BE503272, AI421319, AA465255, AU156932, N49590, N67740, BF091626, AI914058, AI274909, AI190112, D20733, AW188089, BE789377, AI858737, AU157726, BE275478, BG256465, BE813963, BE220862, AA857052, BE936270, AI217103, AW379725, N49070, AA383123, BE551639, W86964, H60699, BF573578, AI040284, AI762085, R51650, BF432031, N31773, AW273437, BF091557, BG178271, BF056174, AA769783, AA812984, AA383124, AA661899, BE242063, BE241787, R93782, AW304171, N56201, AW139929, T60662, T64969, AW615368, AW002388, AI341196, AW594520, AW664816, AA465147, BE972735, BE548258, H98958, AI308213, AI364564, AA984765, T57763, AI769568, AW612305, BF748531, AA603698, AA827085, AI638355, AI190529, AI364456, AI420514, AW301000, F37231, F24191, BE207700, BF439061, AV682063, AI569188, AI784377, T25055, AW996932, AW407523, AA279845, AW991326, AI699592, BF904839, AA812498, BF109474, BF222718, AA535238, BE814080, AK001954, AF151819, AF257318, AF263364, AF263293, AL049597, and AB007960.
HOGCI31	712	1044821	1 - 917	15 - 931		BF973454, BE727445, AL531039, BG115169, AW969042, AW206059, AA700020, BF968627, BG114062, BF432198, AW957238, BE537060, AI672358, BE326492, AA916774, BE003525, BF980402, BE003532, BF684794, AU151013, BE003523, AA699619, AA827289, AI024492, BE043951, BE206364, AU152265, AU158148, AI032726, AI208858, BF973606, AI375573, AA725543, AA287974, AW510399, AA693821, AA770210, AI240892, AI824282, AI684175, AW362905, AA426229, AA525966, AI049580, AI334247, AA262040, AI032993, AA291268, N59203, BE328503, AW383419, AA291339, AA504437, BE064374, AW273123, AA767810, BF350525, AA626831, AI188629, W45184, AA993418, BF446920, R60802, AI524794, AI797031, AI796476, BE747743, AW779035, W42659, AA782458, BE741947, AA203299,

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HNOKX86	713	1044893	1 - 1022	15 - 1036	BF970013, BE783656, BF971148, BG105075, AW510702, BE896959, AW188107, AW006794, AI983025, BE910195, BE782150, BE906341, AI015619, AI301966, BF727414, BE858813, BE880216, AW168796, AW051432, BE890490, BG054826, BG178384, BF679757, AI125994, AI360252, BE879146, AW149790, AW071976, AV702313, AI583243, BE785316, BE881479, BE074234, AI924167, BF699289, W95089, BF670105, BF674585, AA846833, AI912804, AI805679, AA769460, BG109223, AI955820, AA918990, BE973606, AA702505, BE547758, BF184398, W95090, AA995358, AI581725, AV754940, AV707627, AI128802, AI025955, AA702099, AA527383, BF196614, BE122666, AI418108, BE048049, AV747543, N42404, N33447, N42420, AI308924, N31382, AW014670, AI857970, AA293374, AI718979, AA948391, AI300946, AI369901, N24088, AI075836, AI056727, BF340421, AI014666, N35120, N24587, N33735, AI446529, BF743351, AI336552, W38924, AA886635, AW182324, AW630926, AA147675, AI797735, AW073663, AA719417, AI720299, AV742727, N23506, AI335652, N71994, AW627640, BF115412, AW086197, AI360960, BG251694, AA507156, N94922, AA885121, AA701511, AI346138, AI262338, H99753, R74310, AA953666, N29163, N58294, AA713692, W04143, N54557, AA398521, AA648593, W79708, H50571, AI282475, N24140, AA953525, AA782200, AA782844, R23867, AW877810, F37061, W57541, AA157599, W81380, T31783, AA946607, AW952439, AA938014, BE764972, AI300210, N70117, H40663, H45202, AA627360, H50365, T19230, H40733, AI026634, AI620903, AA063083, R67980, BE693583, H97133, AI243093, H50336, N42319, H70236, AA576208, H42168, N33428, N66148, R33701, AI000953, R74212, T35747, N33907, T62950, AI262339, R67981, N98671, AA701513, N28470, AI541287, T62802, AI277219, N76637, T31262, R22630, BF817665, AI955533, R39387, N29483, AA931753, R22631, BF572160, R33596, H27877, F30122, R28433, AW583802, H70237, AW382331, H45185, BE714145, F31733, R38311, AI872684, R25406, BF964201, AA328918, BE811585, H42989, AA512926, BG178689, BE811484, BG115626, AA834433, AI090035, Z42779, AA063133, H41269, AA709283, BE811590, H13228, AW297741, BE701599, N99376, AA912616, AI468912, AA181716, AW750247, H59925, BF214441, AI221915, AU142828, AW382456, BE170265, AV753284, AV739258, AV737288, AV743484, AV753722, AV738516, AV701224, AV741385, AV701471, AV738340, AV740375, AV701422, AV738631, AV742732, AV701384, AV739963, AV735357, AV742047, AV742725, AV701030, AV701123, AV701130, AF092138, AC006254, X95834, AX030944, and AI498102.

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HPCTV49	715	104537 9	1 - 576	15 - 590	BG105380, BF969874, BF791362, BE294238, AI708983, BE562951, AA639261, BE905959, BF205851, AI817372, AV735170, BE797554, BF245538, BF983670, BF679415, BF239185, AI277914, AW951784, AV744259, BF972333, BE378677, AA196003, AA158111, BG112886, AI199301, BE336876, AV726412, BE539723, AA211640, BF211561, AW884452, AI114687, BF718736, AA614365, AI199303, AA196119, AA669012, AA211585, AA961699, AA191452, BE382522, BE564019, AI369878, AW024386, AI088810, BF210300, AA928043, AI186091, BE395743, BE866704, AI199158, AI803530, BE395559, AV735419, BE206116, AI356575, AI083939, BE881084, AA548552, AI476158, D56069, AA669359, AA724190, AI347760, AA872509, AA147830, AI278100, AA192651, AA070828, AA782902, AI815655, AA070056, BE866200, AA192676, BF212031, AA610321, BF678688, AI879955, AA923683, BF969895, AI224845, AA564302, AW130508, AI434457, BF962151, AA503189, BF948015, AA910390, AA158110, AV742633, AV744698, AI878958, BF964919, BE311727, AA308438, AI863146, N95018, AV745283, AI344806, AA112888, AA186678, AA526631, AA847739, AA602428, F26539, AA938523, AA083874, AW074943, BE958153, AA316417, F17706, AA099735, AI038843, BF956344, AA146746, AA506417, F26205, AV739187, AI801282, AA146747, AV739630, D52869, AA192987, AV746403, AI540297, AI149112, AA385291, T27780, AA664835, BF573989, AW262292, F28424, AV745990, F22200, AA644540, F27688, AW973119, AA531375, AI475222, AI906360, BF676400, AA533539, AA773178, AV744177, T64019, BF211310, AA373881, BG030785, BF574629, AV681847, AA580408, BE877175, AA669013, AV696866, D54115, AA224280, BF667957, BF216797, AA244162, AV728485, BE044954, AA650377, BE908110, T23953, AA317596, AA729652, AW629957, AV726694,

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HHGDK68	716	1045464	1 - 2166	15 - 2180	BE798466, BE792763, BF346161, BG036648, BF526672, AW192876, BG252976, BE727584, BG170636, AW080555, BF037480, AA402705, AL134722, BE314754, BF308128, BE727937, BF127508, BE792403, BF726123, BF314842, BF308283, BF087321, BE904611, BE878196, BG121014, AW581299, BE891151, BE294909, BE260835, BF149225, BE717224, BE314875, BE178816, BF829778, BE547480, BE270117, AW965542, BG118314, BF993933, AW239476, BF794695, BE735034, AA190652, AU137393, AA001309, BE907465, BG113926, BE349269, BE394869, BE540323, AI954586, W27225, AW965053, BG001604, BF949350, AW205949, AW960687, AA150308, R84546, AL079805, AA694546, BE885039, W19862, AL121458, AI022854, AI248653, AL134491, AA446496, BF330245, AW965553, BG105907, T74129, AW381633, BE542634, R54939, R87563, AW381629, H62448, BF736424, BF800312, AA494125, AA257958, BF876904, BE185001, R89018, F10003, AI525827, AI248651, F12386, AA336044, BF876147, BF127687, BE938879, AI272279, AW368711, T98060, AI828030, AI033792, BF530645, AI553819, AA335778, BF822637, AW381921, R49754, AA989589, W94106, AI872969, BF350448, BF094932, AW341300, BG167299, AV745913, T07757, AW885323, AV745597, AA402270, AV746103, AV745861, AV745528, AA317574, AV745699, BE793577, AV745572, AV746148, AV746342, AW379710, AA737996, AA112442, AV746343, AA725084, AV746240, AI421429, AW593611, T51370, AV746205, AV746234, BE185002, N90052, AV745556, AW589825, AI056996, BG149674, BE504468, AW583157, H55323, AI811332, AW873526, BF434326, BF983596, BE140525, BF433696, AW806797, BE140530, AW806769, BE140537, AV745604, BG056109, AL020993, L37043, AB024597, AB028736, AB042192, AB028241, AB042191, AF242536, AR063944, U29171, AF183394, M76545, H62438, and H55078.

HNOKM38	717	104550 0	1 - 5155	15 - 5169	AW968555, BG112918, AU131374, BF663523, AL039261, BF303987, BF307905, BG251559, AV753028, BE799852, AW976694, BE348623, AI192780, AW975771, AI824140, AW970158, AA855062, BF593932, BG254148, AI553813, AI652642, BE676603, BE547167, AW025094, BF205581, BE465313, AA442404, BF929424, BF115230, AW956014, C18242, BE858311, AA463617, AA910953, AA149637, AW005325, AW500219, AI131430, W22181, AW892169, BF310817, BE974198, AI653494, AI144153, AI147052, AW500584, N48492, AA600846, AW084489, AW881107, AI146715, AI131429, AI184485, AI857619, AA043233, AI356899, AW273471, AI292205, AW009154, AI092851, AA507221, AI475747, AI081975, AI027527, AI188617, AA514494, BF108742, AI003781, AI140121, AI813409, AI769089, AI097484, AA031367, AI131528, BF108751, AI077719, AI870311, AI636315, AI092702, AW504357, BE166730, AI151189, AI280813, BF377335, AW149704, AI949569, AI144289, AA808626, AI302699, BF092734, AA928737, AI818837, BE166727, AW085809, AI151243, AW072397, BF092684, AU153117, AW674814, AI081578, AW963712, AI299669, AW576157, AI696710, AA031366, AV704638, AA261786, AI082187, AI291767, AI122662, W44973, AA486067, AI096891, BE645337, BF732335, AA459445, BE674665, N93420, AI493100, AI810357, AA724134, AA150668, AI830807, AI126909, AI695065, AV706466, T64320, AI830919, AI473840, AA233863, AA972657, AW025734, AA975233, AA838818, BF888438, AI660743, AA678995, AA131522, AA701056, AI186771, AI095875, AI937199, AI198335, AA043497, AW151759, AI148806, AA039552, H63629, AI090278, BF888611, AW074422, AW166401, AA610498, AA079367, AI143324, AA932400, AA121939, AI419022, BF828267, AI298091, AI298830, BF432768, AA046027, AI814554, AA086173, AI291750, AI333860, AW500312, AA495941, N93195, AI279234, AA079366, AW504352, AI189949, AA235192, AA948186, AI566530, AA235305, AI459658, AL135516, AA234879, N34281, AI917944, AW996594, BF902332, AA150791, T86560, AI039499, N55334, AI219345, BF116056, BF058704, AW246911, H87243, N41823, AI459676, AI281364, AI219522, N95716, AI827160, AI864427, AI222287, AA854438, AI184792, T90637, BF888464, AA936270, AI308929, AI335780, AI749548, BF058780, T78159, AI200243, AI908307, AI146908, AW191632, H63630, AA961001, AW968730, AA928837, R72109, R53119, R92798, W77770, AA495942, D78921, N44173, AI151399, AA553709, AI089857, N35506, AI436061, BF732362, AW369792, AA088583, AI445384, AI299676, AV704653, R93253, R67862, AI277503, AI034120, N32868, Z28359, W07407, AA243431, N23435, R00240, AA279203, AA234903, AC003036, Y12781, F38006, AC012068, AC009494, T54329, T54404, T60642, T65670, T86738, T83164, R00349, R24045, R67863, R72066, R93159, R93893, R93894, H96272, N32874, N40453, N77340, N80278, W21461, W24959, W38781, W42673, W72105, AA034328, AA036664, AA046079, AA057288, AA058733, AA076639, AA100341, AA121940, AA131309, AA149505, AA224420, AA232808, AA235055, AA463265, AA279195, AA280646, AA282022, AA465669, AA661633, AA688118, AA745876, AA814049, AA830728, AA862668,

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HHFUN47	718	104584 2	1 - 4688	15 - 4702	AL118822, AU120116, AW269317, AW235710, AW949780, AW835591, BE885389, AW385523, AW368195, AU136378, BF672321, AW949772, AV647327, AA020767, AA805651, AI133211, BF790480, AW611834, BF678033, AA533280, AI934341, AI129264, AI623210, AW117432, AA032025, AV728387, AI761894, AW835672, AW804652, AW368145, AW835676, BF575294, BF241005, AW501351, BE207839, AW835756, AI148094, BF673972, AI754312, AW118039, AW118031, AA056300, AW302578, AW673464, AA741269, AL040731, AI080261, AW501352, AA047451, BF449051, AI076275, BE547656, AI168388, BF701512, AA825450, BF696195, N69536, AA733179, AI372863, AA644402, H79608, R86224, W00822, AW339691, AA773699, BF701693, AI032486, AI343746, H79607, AI168384, R84852, AW592904, BE907830, R59102, AA017282, BE744773, AI863708, AV732392, AA830217, AI247995, T74357, AA083799, AW955352, H86635, BE536679, AA113340, AA773860, BF029973, AA317438, AW748183, Z25042, R98711, BE084828, BF086229, BE930149, BE930157, BF086233, R98935, H86640, Z28740, AA047508, Z44414, F12677, R77563, AI248001, R59103, BF964981, H86386, BF909593, H66174, AA325403, BE695829, BF086234, H72726, R48554, BF987882, H85264, N99687, BE930144, H86547, AA370230, R39409, R77464, M79138, R54000, BF215788, BE958434, AV725256, BF815162, AA768433, R22817, H86552, BE930179, BF343210, BF822505, AI365558, BF343307, H66175, F10288, BF807929, AA917319, H82743, AA777671, R39650, BE930207, H64896, R21203, H83618, H72727, R92960, AA354071, AI052753, AA325917, AW043708, AV657290, AI813384, AW275798, H64897, BF840999, BF343127, BF987880, AI802143, AI659361, AI633530, N77699, AI692218, C01333, AW512682, AI078548, AI373722, BF001516, BF308373, BE409393, AA295269, BE005257, AW387711, AW675785, AI185142, BG055127, BF343973, BE930154, AI589187, AA974704, R86225, BF086222, AI492965, AV732391, N84068, AI334970, BF109219, BE764445, N86911, BF332083, AA911023, AI523089, AA724435, AW771479, AL040732, AW002191, AI040768, AW629685, BE764472, BE246666, AI699869, AI479544, D79918, AI268089, AI129110, AA031914, AI433888, AI344749, AI962683, AI984242, AI261676, AI401253, AI245165, AW470003, AA020768, AI982771, R29471, AI274493, D63477, and D16924.
HNTSV18	719	104599 5	1 - 491	15 - 505	AW630624, AV689396, BF847954, R13365, Z45071, AV688500, AJ000534, and AF036364.
HWHGU08	720	104613 7	1 - 2859	15 - 2873	AI261617, BG252364, AI963829, AI857990, AI431824, AI632752, AI590245, AI953341, AU150524, AA888092, AW300119, AI797786, AW969008, AA194057, AL516571, BF111123, AL516572, AU150299, AI436657, AW080248, BE219089, AI149239, AI891112, AI073870,

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HE6CR19	721	1046177	1 - 1191	15 - 1205	AL527780, AL527781, AL519895, BF684507, BE728826, BE732828, BG033941, AL519643, BF195663, BF026407, BF440019, BE781977, BF440052, BE778879, BE878075, BE780848, BE387517, BE563797, BE778881, AL519894, BE736231, AL519642, BF036674, BG105762, AA127810, BE960859, AV759501, BF725812, BE782483, AA639784, BF213309, BE779179, BF667921, BE877161, AI088520, BF593734, AI984009, AA035465, AW173349, BF679234, AW162019, BE513040, AI453530, BE675483, BF681153, AI719084, AI719711, AW575396, BE440008, W52852, BE390815, N34255, AA643698, AW160399, AW152523, AI342341, AI361959, AA121482, AI336152, AI887169, AI954927, AI142474, AI953987, BF239121, BE254564, AA088249, AW051781, AI359968, AA922338, BG254402, AI609114, AI144474, AI143580, BG025562, AI127719, AI685961, BF939832, N25654, AA120783, BG054734, AA455701, BE300789, BE784090, BF036389, AI493197, AV751872, AI337879, BG170723, AA507014, BE883738, BG252431, AI467977, AA830816, AI087247, BE253888, AI040901, AI978624, AA832498, BE276608, AA024762, BF972946, AA976499, BG254889, W80466, AA181577, AV711565, BE904995, AI291251, AW239079, BE876001, BE380086, BF516510, AW151050, N30499, AA132426, AI188805, AA120782, AI950951, AA045679, AW304280, AA865206, BG165235, AA910216, AV721356, BF028243, N33152, BG255156, AV734719, AW055058, AI680538, AI423011, BF691779, AI302349, AA974887, H74189, AA648271, AI149371, N23533, AA176232, BF111041, BE463645, AW390100, N79791, AW337755,

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HE9EJ82	722	1046856	1 - 698	15 - 712	AI264167, AW024384, AI805143, AL528716, BG176833, AW188479, AL515117, AW316653, BF978676, AW468539, BF220255, AW151268, AI660059, AI884397, AW083210, BE866994, AI857495, AL528715, AW083845, AA492597, AI183391, AW103944, BF972455, BG231692, AW247328, BE967211, AA044722, AI192356, AA155851, AI951000, AW954615, BE546302, BF345334, BE904786, BE887942, AV699862, AI127249, AI445073, AI087041, BE622662, AL515118, N92603, BF036604, AI857493, AA434308, BE741571, AA576070, AI300862, AA412005, AA524752, AI683151, N52268, AA993030, AW001923, AA055695, AV747912, AI080731, AA130480, AI434530, AI801301, AI307431, AA115961, AI612157, AI344752, AI198498, AA084354, AA872949, AA527933, N50030, N89917, AI002849, AI349158, BE046190, H27858, AI445684, AW574666, AI308038, AW591757, BE874691, AA181084, AA494207, W38769, AW073576, AA760954, AI076897, R11530, AW270393, W02683, AA833912, AI610933, AI126708, C75128, AA564733, AA834042, AI570039, BE619739, AI199906, AA479661, AA552405, T03363, AA578826, AI318567, AA812622, AA508099, AI066707, BE892061, BE905303, AI274403, BE301812, AI762529, AA244143, AI291785, AW075097, AW408246, AI291798, BE747408, AI250873, W90686, AW074529, AI950523, T29477, AW472719, AA602326, AI674354, AA694448, AA618563, AI216558, AA416905, AA358787, AA164194, AI749612, F36797, BG111256, AA705144, BF761489, N72919, AI254726, BF207259, AA885864, BE839977, AI274575, AW950543, AI093111, AA427770, AW245476, F33231, AA397569, AA622229, BE313059, AA614511, AI184775, AI749710, BE839987, BE839838, AA328240, T52766, AA678126, AW079415, BF183458, AA399530, AA977965, BE742136, AA357104, BF360273, F22057, C06188, AA357102, R96895,

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HRADC23	723	1046980	1 - 327	15 - 341	AU126881, BF983814, AI557307, AK001343, and AB023206.
HODHS68	724	1047137	1 - 2288	15 - 2302	BE792114, AL534348, AL534349, AU124491, BE562397, BE730315, BE744720, AU121103, BE741883, BE794040, BE798051, BE902365, BE734769, AU138176, BE250049, BF313678, BE274812, BE616156, BE791884, BE743514, BE792079, BE899195, BF663485, BF337566, BF026377, BE512749, BE729142, BF970574, BF974320, BF311538, BF343802, BE791179, BE794696, BE967223, BE732083, BE735292, BE891114, BE740517, BE876949, BF663556, BE612746, AW953708, BE899109, BF316276, BF220113, AU123329, BE855899, BE907314, BE261130, AU138135, BE250022, BE280747, BE388938, BE514266, AU139275, AU139772, BE617604, BE207133, BE614858, BF568538, BE646559, BE269929, BE512850, AW009368, BE407831, BF967992, AI127417, BF127578, BE304393, BF027687, BE391369, BE390191, BG180845, AV727024, BE389618, BF204525, BE896693, BE407376, BE858244, AU138529, BE891905, BE272012, BE385611, BE388055, BE398168, BE729753, BG055002, AI174970, BE269924, BE277405, BE252867, AU124535, AI745604, BE269570, BE884489, BE267965, BF967269, BE789154, BE390973, BE255883, BE253680, AU139847, AU122058, AW249536, AU135396, AI816428, BE391850, BG261416, BE743657, BG027907, AV734566, BE315559, BE730574, BF034659, BE904702, BF971755, AA837518, BE901600, BE884643, AI333777, AW960014, BF304373, AI754405, BE268246, BE387151, BF364911, BE293615, BE389505, BF436344, AW953707, BE277342, AV722757, BE254088, BE616947, BF435115, AI088783, BE389938, AI017341, W73293, BE382443, AI147213, AW960003, BE313512, AI815488, AI391611, AI687490, BE251116, BE301958, AA054638, AI978906, BE840536, BG231617, BG179142, BE208839, BE388273, AA481724, AA461067, AI762506, AA481485, BE931983, AI161029, AW072033, BE898683, BE293820, AW182359, BF681691, BF207095, BE259061,

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HOPKT59	725	104716 9	1 - 1993	15 - 2007		AL538267, AL538268, AL536316, AL519069, AL518089, AL515220, AL519068, AL534091, AL518090, AL518720, AU118653, AL513972, AL516932, BE396428, BE561425, BG030683, BG168170, BE902101, BE889741, AU120625, BG258226, BF969760, BE881362, BG109328, AV715166, BG031962, BE560577, BG170701, BE271235, AV697227, BE563297, BG110584, BG035319, BE778261, AV687629, BF793338, BE867409, BE537748, BG028050, BF968668, AL518719, BE779869, BE899369, BE868440, BG034796, BF795452, BF794003, BE535885, BE536946, AI114609, AV683224, BE908653, BG170806, BG028857, BF790207, BE888202, BE176437, BE252802, AV682238, BE790123, BE884131, BE886162, BE383007, BG026597, AV648458, BE780464, AU121530, BE785759, BF317433, BG165377, AV723872, AW246426, BF102623, AW246676, BE790083, BE894533, BE621952, BG168808, BE780001, BG260764, BE176464, BE560381, BE781301, BE895718, BE542076, BE268194, AA861515, AU127224, BE866204, AL536315, BF219209, BE547995, AL134953, BE536554, BE893450, BG251870, BE537883, BF665254, AW574534, BE397344, BF130962, BG117986, AW951780, AW961790, BF665393, BF213508, BG036975, BE909591, BE393351, AI057535, AV695128, BF243084, AA640788, BE565377, BE893448, BF667482, BF241609, BF382787, BE882314, BE548460, BE966884, BE623002, BF669327, BE567045, BF030561, BF382276, AV648438, BE566531, AL515219, BE271127, AW026704, BE768761, AI890350, BF094514, BE539503, AA478931, BE779052, AA788718, AW085632, BE958103, BE910474, BE566183, AW020966, AI754764, AW027875, BF212113, BE301928, BG120145, BE939321, AA705802, AA669341, BF341741, BF431052, BE163541, BF699060, AI525599, BE566933, BF246771, AI565691, AL516931, BF668817, AW291598, AL518721, AV648187, BF028376, BG035478, AI371145, AA564341, AU126239, AI924037, AW089712, BG179942, BF594063, BE257258, BE909857, AA315150, AW474730, AI348106, BF034401, AW511476, AI913311, AI128178, AI582889, AI498850, AA789326, AW630868, AI278005, AI567879, BE271121, BG025633, BE221459, BF340121, BF377699, BF804951, BE858659, AA315129, BG108412, AV648349, AA620387, BG259842, BE542108, BE785934, BF591540, BF525858, AA599830, AW072545,

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HMCFK45	726	1047212	1 - 1013	15 - 1027	AL521763, AL521762, BF792361, BE261099, BF526380, AI986196, BE889615, BG256168, AI921080, BF527738, BF058408, BF685525, AW129664, BF665973, AI889328, AI720586, BE778576, BE263619, BF681436, AV764474, BF527915, AL534665, BE727439, AI494337, BE043924, AW304856, AW245895, AI334063, AA878881, BE778413, BE047261, AI937111, AW005094, AA046873, AA236621, BF794030, AA436426, AA587338, AI131298, AI150026, AI264608, AI039900, AA209292, AI689537, W44562, AI033606, AA432040, AA708471, AI384070, AA431781, AI460207, AI566174, AI208747, AW245638, BE165650, AI338120, AI075087, AI148620, AA236897, AI003886, AA553372, AI160495, AI860826, N37025, AA588125, BE772371, AA991703, AI860722, BF670021, AW173632, AI031930, AI148963,

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HPIAN63	727	104738 1	1 - 923	15 - 937	AL521431, BF528399, BE386454, BE907876, BE885815, BE384806, BE742226, BE868872, BE393635, BE296830, BF210412, BE794021, BF316528, BF311673, BE798044, BF977510, AW879736, BE560588, BE874213, BF796768, BE312472, BE866870, AL514406, BE397088, AA088481, AI741504, AL516793, BF753924, AL518414, AL526106, BE274338, BE384768, AA135064, BF918538, T34299, AA211505, AA077740, BE741094, Z19160, BE409406, AW960296, BF335111, R18344, BG116230, AA705590, AU133650, AL528238, AU125394, X93829, AL528237, AL520947, AL517099, BE274799, BF792476, BE733293, AA211552, BE733623, AA191137, BF344991, AL518413, BF970660, AL516792, AW273923, BG109174, BE790955, BE280703, BE900248, AL521430, BF313555, AW583107, AU131283, BF311518, BG116176, BE793654, BF793593, BG254726, AL517098, BF766970, AU124823, AW379380, BF686042, BF795670, BE387052, BE085906, BE736616, BE764968, R58133, BF026937,

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HNSME49	728	104740 3	1 - 1283	15 - 1297	AL523562, AL523563, BE378573, BF206213, BF975035, BE741172, BE731890, BG169379, BF312271, BF056266, BF684218, BF204109, BF974071, BE275663, BE616390, BE266413, BE251848, BE312782, BE395951, BE738719, BE616657, BE782523, BE562006, BE394175, BE281417, BE395250, BE385799, BF699117, BE393978, AW161930, BE280885, BE266301, BF212649, BF797676, AW327483, BE383915, BE392818, AA522682, AI879343, BE207213, BE407786, BE738153, AI927308, BF684140, BE278833, BE278348, AI887795, AW157569, AI720383, AW168022, AI189980, BE267205, AW078785, BE385795, AI745650, BE786772, BF515375, BE389083, AW341049, BE779313, AL037204, AW249997, AA280809, AI621091, BE047746, AW161588, AI381975, AI879723, AI803074, AW022517, AI985130, AA476629, BE769360, AA679795, BG034061, AW163444, AI763315, AI936543, AI866527, AA583868, AI694596, W26865, AW016826, AW515140, AI685799, AI224558, AI382901, AW238803, AA076232, AI968250, AW241422, BE514362, AI825161, AI214277, BF939583, AI203033, AW602826, AI962655, BE272870, BF934247, AW207092, BE252620, AI370488, AI206860, AW377597, AA076233, AA602981, BE551059, BE765181, AI682531, BE765007, AA280861, N50855, AI611693, AA805491, AA757347, BE378176, AW378754, AW007634, AV712854, AL525708, BE765158, AA449158, AA928507, BF092051, AL121780, AL121900, and M90309.
HWEAC64	729	104747 3	1 - 709	15 - 723	BE618503.
HOCQI51	730	104748 3	1 - 1694	15 - 1708	AL526732, AL521724, BE898418, AV729573, BF037796, BF034373, BE549240, BE396381, AV726692, BF974647, BE397839, BF528776, BE513516, BE513533, BG177494, BE513961, AL521725, BE559679, BE781919, BG179481, AW016879, BE312441, AW027739, AW960345, BF000603, AI937001, AW006300, BF000621, BF223444, AW665359, AI984913, AW732370, AW027749, AL526698, AA514389, AI420117, AI376011, BE268873, AW044304, AW170680, AA927748, AI805193, AI597781, AW083552, AI285216, AI380507, AW965544, AI955084, AI131407, BG121860, AI921290, AW573286, AI220811, AW467548, AA335820, AI860832, AI567117, BE675325, H20004, BE297532, AA805985, AI497610, AW196701, N50962, AW580605, R89359, AI685370, AA463330, AI675238, BE397659, AA305422, BF247434, BE909347, BF087638, AA948600, AI749405, AA954980, AA720818, T72734, AA313736, AA352987, H81154, AA613712, AI917200, H20005, BF874291, BF690826, AI971540, T83260, AI174354, BE241897, AW467675, BF915871, AA927279, AW572779, BE269418, AA157946, AI910070, AA157109, BE241698, AK000437, AB034912, AB034911, AL136528, AB031234, AF235000, AI953044, and AI991519.
HOPKE15	731	104763	1 - 1513	15 - 1527	AL523829, AL523830, BE748885, AU123670, AV718375, BF797141, BF568841, BE887723,

	4			AA887480, BE729808, BE893661, AV715007, BE538386, BF568532, BG024630, BF983240, BF184518, AW338929, BF975383, BG028594, AW006816, AV702828, AW084038, BF699094, BF513421, AW949818, BE748296, BF212610, AI754052, AI339062, BF699690, AI860543, AA410913, AI184478, BE546334, AA829501, AI813648, AI334051, AI343363, AA447551, AA745858, AI342592, BF211853, AA441809, AA877341, AA830648, AA910616, AW327730, AI283134, BF238587, AI124061, AI858562, AA837909, AA099842, BE565203, AA134879, AA136131, AI476616, AI937399, AA134878, W37996, AA099982, AW327787, AA316961, AI937747, AA765478, AA128810, BF674972, F33250, AI298461, W37995, AA136101, AW297330, AI632923, AA375379, BF090497, C01321, AW052030, BF002225, BE710326, BE710320, BF208364, AI983187, BF246448, AA679476, BF803430, AA639630, AA278834, AA296711, F13794, AI630249, AI263057, N69349, BF215870, AA082250, T28187, AI525196, BF209792, AI904997, AA876022, AV743531, AW960459, AI081810, BF215317, AA278288, AW889690, AI301503, AA448533, AA385741, BG112635, R58264, BE828841, AI858864, AI312201, AA743611, AA129834, BE540080, AI383138, AA213847, H11824, AI354388, R65651, R32322, BE739230, AW008089, AI952885, AW080062, AW082559, AA224995, N58006, AL133010, AL133418, D38491, AF258546, AL008627, AC006530, AC005756, AK023843, AR075073, AL391259, AC001226, AC004583, AL031005, D85773, AC004217, AK000925, I27606, I27609, AL008710, L41624, AP000008, AL138825, AL049650, AC006071, AP000030, AC010677, Z95116, AL133545, AL117337, AL359272, AL096870, AC005562, AC007597, AC022392, AC007383, AP000403, U21664, AC000353, AC006077, AC010525, AP000088, AL391990, AL358933, Z98885, Z98743, AL096865, AL110505, AC005015, AL133386, AC007954, AP001676, AC005340, AL049569, AC004030, AC005953, AL023096, AC011462, U48216, U71217, AL356464, AC010458, AC008403, AL158830, AF218021, AL109980, AC007787, AP000362, AC020955, AL022302, and AA441871.
HMAEL73	732	104764 6	1 - 2558	15 - 2572	AL532426, BE279744, BE386143, BE893884, BE315356, BE409326, BG036503, AW967111, AW961024, BE395210, BG163373, BE882916, BG164806, AL532425, AW205627, BE715432, AW519019, BE879585, AI829143, BE888360, BG119756, BE326884, BE349200, BE646191, BE787868, N57477, AA402175, AI052349, AI338603, AI494300, AL449727, AW965679, AA861385, W93399, AA643939, AI148517, AA609481, AA782461, AA305901, BF950214, AA860606, AA397690, AI494301, AI193064, AA127902, AI609156, AL449728, AI310400, AA603477, W27291, AI292350, AI186245, N47622, AI248335, AI017696, W92807, BF818795, AI188548, AA399037, AA723059, AA169582, AA056679, AA729892, AW384923, W92846, AA399076, AA778601, AA412051, AA086075, AI242362, AA976896, BF109039, AA086074, AV708868, AA843552, BE715430, AV709683, AW892880, W35189, AA044042, AI201884, AA351819, AA056575, AA317955, AI246351, AW379151, AW242255, AA338497, AA411984, R67339, AW006538, AA534373, AW379194, AL449527, R66505, AI247477,

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HNOKE42	733	1047663	1 - 1458	15 - 1472	AL537309, AL534923, AL538147, AL514646, AL518134, AL534922, AL515144, AL514938, AL537739, BF798047, BE779102, BG110531, BF794729, BE882547, BF311527, BE784081, AL518133, BE898001, BF038322, BG122138, BE777792, BG112262, BF983614, BE885503, BE907779, BE619105, BE875113, BF312594, AW385985, BE177539, BG028156, BE868250, BE870956, BE872233, AL514645, BG109955, BF670395, BF346910, BG168710, BG026197, BE780520, BF983531, BF797061, BF339680, AL538146, BG169331, BG028740, AI129342, BF725462, BG171543, BG252293, BG249056, BE887341, AL037611, BG105682, BE888335, BF035037, BF818006, BE885648, BG164156, BF528550, BE257521, BG031713, AI802026, AL514937, AI983543, BE778562, BE882490, BF061647, AI990763, BE892035, BF965918, AL037610, BE541114, AI652540, BF316618, AI000619, BF744480, BF059626, BE536045, BF925139, BF801724, AW750023, BE895920, AA232766, BG255779, AI905957, BF342272, AI365054, BE261410, BF371935, BE702478, BF367977, BF349486, BF371940, BE142967, BF371926, BE768197, AI126461, AW934913, AW803204, AA232632, BE789515, BE255672, BE251893, BF354308, AI424726, AW934911, AL515143, BE142794, AL037608, AI393617, BF382938, BE768236, BE768129, BF358546, BF361194, BF358539, BF371904, AA913112, BF371898, BE768201, AW751701, BE004342, BF371894, AW176051, BF371900, BF358544, BE767990, BF371892, BF744337, BF744338, BF371879, BF888166, BF358573, AL537728, BF354309, BF746402, BF888256, BF358575, BE834218, BF747016, BF907582, BF371930, BF746494, BF887422, BF888144, BF746493, BG027152, BE767988, BF358579, BF358537, BF368667, BF358577, BF358572, BF746409, AL537639, BF358561, BF381335, BE160864, BF990698, BE047805, AW948956, BF371953, BF371862, BF184327, AL531930, BF309803, BE774413, BE768168, BF358557, BF367961, BE744496, BF746405, AA366622, BE768071, BG150224, BF744334, BF368642, AV726854, AW953059, AW748718, BE873784, BE379011, BF887417, BF911134, BF747018, BF371922, BF371961, R35559, BE548241, BF371889, BF747019, BF747022, T09118, BF907637, BF358578, BE543886, BE774162, BF747017, R44882, BF333533, AW057993, BF445006, BE467280, BF108461, AA420782, W26640, BF907640, H79330, BF887425, BE768196, BF907641, AA470498, BF358582, AW674592, BF356716, BF243408, BF377229, BE964054, AW948865, BG000044, BF972193, BF380438, BF948002, BE768097, BE881355, BF335554, AV729326, AA093128, BF335537, BF382440, BF380435, BE768099, BF371863, BF037905, AA155819, BF333429, R41146, BE768088, BF986234, BF358563, BF362106, BF838633, AA913547, BF371901, BE536145, BF371868,

					BE768103, BF371856, AF116272, AB041651, AF155654, AF090922, AF176646, AF095791, R34232, AA508194, and AA249393.
HOFAE31	734	104767 0	1 - 208	15 - 222	AI718967, AI066500, AI191408, AA970891, W16766, AI074219, BE697102, BE174216, F25014, N45385, BE697153, AA465517, BE697155, BE933955, BF125263, BE279614, AA602119, N94010, F32882, F26209, F25830, N98860, BF890754, AI934901, N77808, AA528414, BF910925, AI338326, AW088372, AW102799, BF082865, BF446895, BF910923, BF940764, BF940090, AA320204, BE407862, BE880623, AA768215, AI151192, AA788658, AI150785, C03969, BE880657, AI302844, AA725287, BE274216, AL038871, BE250832, AI350125, AI568272, BF184324, AA983392, BF025668, AA525200, BF690188, AA977031, AI093521, AI580262, AI720008, BF982252, BF982387, H97078, AV757870, BE280265, BE746297, AI313204, AI626036, AA526171, AA877563, AI144433, AA934574, AI079769, BE537552, AA573686, AA639915, BE336619, BE621249, AA574008, AA976783, T51767, AA492272, AI189510, BF689799, BE621639, AI281422, BE070317, BE270062, BE206770, BE731365, BF726456, BF792623, BG179454, W70094, BF314551, AW804011, BE514138, AI926973, BE278145, BE279378, BF949692, BG104162, BG104416, BF594000, BE252445, BG116305, AA845331, BG033879, N75412, BE795222, AU159719, AI279463, BF210737, AV742989, AA568387, AI201886, AW768247, AA526497, AW084218, AV712368, BE385906, BF239254, AW731911, BF035862, W05113, BF184184, AW955528, BF686583, BE314818, BE275317, AW970035, AW970026, BE298305, BF025789, AU122825, AV645751, BE384271, BE885135, BE735322, BE274738, AI626023, AA315135, AI417313, BF983625, BE906981, BE880936, BG035931, AA642788, AW192600, AW102964, BE252941, BE312467, BF949657, BE719070, AA894481, AA737308, AU122918, AA872663, H93685, AI440105, BF245202, AV758831, AI187012, AA829129, BF238782, BF978001, AA609288, BF037764, AA760958, BE697121, BE409754, BE877422, AW951759, BF026394, AI187043, BE729053, AA448150, AV714599, AI205981, N94451, R77045, BF210261, BE697128, AW514708, BF215823, AI187001, AA578537, BE878700, AA181352, R76883, H20456, AI219168, AI185992, AA614765, AA738347, AA708433, F29053, BF212130, AI984516, BF211261, BE733706, BG107033, BF207675, AA492189, AI869280, R83917, W30797, AA503282, AA781308, BF247001, AI301663, BF673951, AV744514, AA782226, AA448007, H94367, AA771978, AA844201, AA134082, AI984517, AA782267, AA843941, BE259316, AA928994, AI205979, BE939608, AA732966, BF125305, AA508863, AA349148, AW514216, AW161501, BF218574, AI815573, AW513129, AI816249, AI027040, AA962040, AA373789, AI336883, AA081960, AW082030, M36647, Y00764, S61826, and AL122001.
HCLCX62	735	104771 6	1 - 1943	15 - 1957	AA524368, AI696510, AI674756, BF726517, BE219922, BF115854, BF082289, BF223977, BF082295, BE709446, BF994702, AI653814, AW970760, AI493036, BF082257, AA927734, BE709723, AI742259, AI273298, AI751752, BE179959, BE179828, AW023832, T58856, BF086689, AI335806, AW193944, AW969786, AW387268, AA491635, AI982984, BE812093,

						AW470026, BE709567, BE539350, AI857357, T89304, BE739032, AI547028, AI675754, BE082768, BE739801, BF088073, AI445968, AW388312, AW387270, BF917173, AW385195, BE172789, BF821441, AW023717, BE737818, BE934955, AV652592, BF082269, AV652296, BE825625, BF734771, AI255016, AI144048, BE857901, AI254886, BE042127, BE926707, AB033043, and AL157473.
HNOAC93	736	104782 0	1 - 844		15 - 858	AL518708, AL522090, BF348129, BE908863, BF975880, BF984731, AA524293, AU158473, AU151722, AA172255, AA778442, AW071432, AI962941, AA995288, AL041464, AI921770, AI913019, AI339531, AI375317, AW338852, AI762975, AI982701, AW001982, AW005552, AW173712, AA682389, AA703497, AW272286, AA291361, AI559320, H30144, AW002560, AI078626, AI374801, AI799670, BE326490, AA039605, AA837865, AI634266, AI811885, AA938195, AI198953, BE049418, AI337411, BF590509, AI202521, AA286830, AI376062, AW591316, BF221893, AW276312, AI803146, BE677095, AW241544, AI671111, AA999947, AI635535, BE046926, AI380918, AI144276, AA045667, AW003959, AW576619, AI926506, BF339142, AI380249, AW050926, AI343816, AI962358, W06948, AW000771, AI986113, AI341453, R20109, AI345956, BG057782, AW316665, AI804761, T32375, AI889528, AW189035, AI273528, BF448893, AI470679, AI582500, R83376, BE350636, AI439844, H43845, AI983302, BE465975, BE671908, AW015804, AI358272, AA658160, AI829562, AA503941, AW576624, AI492102, R43161, BG057004, Z24817, BE839929, AA573547, AA652859, H44678, AW023495, T30328, AI033000, N49249, BF589973, AI203037, AI968272, AA205445, AI582619, AI492974, BF000526, AI470826, BF447211, AA428059, BE645811, AI912962, H26401, AA403302, AA581617, AI675362, AI394724, AI473131, AA569977, AI659621, AA894924, AI271700, AI969076, AV708091, AI810463, AV708568, BG152616, AI636203, AW168376, T31879, BF222896, BE247374, AA461344, AW796804, AA461170, AA565451, T36184, BE965443, AI570375, BF823699, H26136, AI699563, AI678338, BE046814, BF823545, AA573555, AW952581, N91497, AW798340, AW300260, AA776537, R00293, AV662182, BE877215, W24212, AA579280, AW438921, BE925445, AI432919, AA910303, BF849610, N91964, F35064, BF038681, AI671617, BF876344, AI990681, AI141248, BE827926, R16094, BE621795, F18684, BF930781, BF876112, AL040081, AW374653, AI867546, AA039691, BF956789, AI522211, BE938287, AI416955, BF840152, AI083775, BE764993, BG106099, BE180909, AA627941, BF690240, BF904244, AI586962, AL121069, BE764982, BG150593, AA947649, AI969263, AK025903, AC004493, AB016091, AB016092, AK025579, AB002322, and AF201422.
HMEJA45	737	104784 8	1 - 385		15 - 399	BE292722, BE311856, BE790470, AU077190, BE934813, AL521862, BG171245, AL521861, BF033257, AF091242, AF150754, AF074331, AF173365, AF085144, AF052453, AF160504, AF009615, and AF160503.
HLDAS11	738	104793 7	1 - 2233		15 - 2247	AL527385, AL527336, AI085594, BE675424, AV648480, AI979021, AI888200, AI888205, AW571478, AW001578, AV719198, BE082789, AA411613, AU151314, AU147730.

					AV695890, AW474738, AA235006, BF591727, AI473648, AW444436, AI453775, AA976885, AI554850, AI744678, AW662311, AA432198, BF826164, AA411193, AA856575, AI802375, AI240381, AI805984, N53228, AA902517, AU153139, AU153201, AU160220, AU149981, AA633556, AW571651, AU146533, AA732554, AA398095, N73775, AV648281, AI658850, AW591720, AA693813, W03922, D81541, BG056884, AW591305, AI269162, AI050698, AI093710, AA257980, AA872982, AA233692, AV656068, D81376, H57533, BE090253, H57534, BE089691, R32629, AV650024, AV651265, BE090262, BE089675, H72479, AI378463, AU143071, AI278448, D61024, AW970707, AA356813, D80871, BF767608, AI572718, AW021225, AA381648, R71379, AA399573, BF242145, H15501, AI536017, AI291594, AA381354, H72880, BF591732, AA768658, AW803196, AW390750, T79641, AU122030, AW998422, BF185555, R31158, T79727, AI872714, T80069, AV696210, AA381995, AA579383, T80891, H72158, AW998416, N66352, AA236265, AL045223, T70314, BF116026, BE547062, BF360188, AA321074, Z41949, AA295261, BF510030, AW503123, AI619790, AW388020, BF828794, N98415, AI582180, BF896721, BG152697, AA454520, D87742, AK025122, AK025506, and AK026489.
HWMJB31	739	1048009	1 - 976	15 - 990	BE304457, BE617215, BE794425, BF744311, AW419202, BE906071, BE409035, H38334, AI124650, BF759902, AL533012, AA300183, AA324325, AL532968, BE409065, BF923651, AA299557, BG255262, H53446, BF745967, AA337307, AA336843, AA299817, AA336805, H30706, R84598, H38499, BE617695, R89516, BE082820, BF857426, AW578650, AW361826, BF870291, AA663855, R46417, BE796786, AK024593, AX013117, M27444, AF233349, and AF233348.
HAZAA31	740	1048188	1 - 2129	15 - 2143	AL515521, AL518695, AL515714, AL515558, AL515715, AL514564, AL515894, AL516404, AL534973, AL518694, AU131173, AL515895, AL534974, AL515559, AL536049, AU130290, BE794152, AU125520, AL516317, BE733098, AU125092, BE746923, BE794981, BE791638, BE731397, AU130373, AI188253, AU143550, BG023902, BE744896, AL516316, BE531024, AU124578, AU125971, BF792516, AU138955, BE616473, BE729421, AU125450, BE615200, BE615543, BE563848, AU125003, BE275254, AU131011, BE728018, BE869056, BG035448, AU142978, BF527447, BE789624, BF340883, AU131096, BG024796, BG177633, AU126508, BG109742, BF530968, BF984286, BE615009, AU123237, BE786105, BE731315, AW166145, BG034286, BE896158, BE782098, BF341031, BE543473, BE274751, BE735992, BE734587, BE744172, BE271218, BE869393, AU143024, BE869793, BG029911, BE876396, AU141457, BE614701, BE869741, BE614465, BG115206, AI476768, AU122005, BF797789, BE614982, AU125950, BF970334, AI625268, AU136128, BF970691, BE901014, BF026355, BE618475, BE276036, BE676167, BE616881, BE779338, BG115054, AL515520, BF206604, AU121965, BF026079, BE869898, AU125968, BE617234, BE781881, BG105890, BE336933, BE273463, AW076037, AI879038, BG176859, BE892191, BE513174, BE397646, AU141603, BG108066, BE673534, BE619328, BF982855, BF569494, BE880193, AU142767, BE546811, BE257373,

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HOCMC83	741	1048300	1 - 2694	15 - 2708	AL527718, BE727092, BE277284, BE799194, BE383971, BE903316, BG255149, BE269261, AU130997, BE893222, BE409350, BF026446, AW967431, BE278876, AU127743, BE388306, BE296444, BG255006, BE297279, BF026993, AA400211, BE390589, AL037594, AI972516, AU124175, BE261560, BE277082, BE389530, AU129574, BE617885, AA400122, AL527719, BE390249, AA237058, AI923544, AW167897, AI923081, BE297995, AA582199, AU151663, BG179436, AW962854, AA236859, AU128680, BE297707, AW081352, AA599540, AA594981, AA075795, AA757241, AA490530, BE617429, AL037593, BE515229, AI190926, AI420338, AI342628, AI623217, BE464071, BE464072, AW511378, BF061878, AA620310, AI199369, BF923681, AI553839, BF568678, Z44647, AW015643, BG117344, AA311944, AW013951, AA258294, AA918784, AA768625, BE833134, AU155528, AW246032,

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HCFCS40	742	1048427	1 - 4397	15 - 4411		BG164191, AL135185, BF983123, AL041280, AV687584, BG250650, BE788908, AV645574, BG115164, BF342638, BE876977, AA702184, BF671348, BG248849, BF351087, AA152030, AW474133, BE539165, BF513442, AW269763, AI962971, AA935874, AI150109, AI554409, AW007775, AW468469, N34238, AA890008, BG169542, AW021321, AI082758, AI922307, AI199306, AA282370, BF248155, BF374008, BE547356, AA037349, AL041279, AI688218, N22419, AA278551, AA406318, AA152104, AI367278, AI797211, AA203606, AA258062, AL038734, AL038733, AI089356, AA884389, AA017390, BE930063, AA661741, AI082269, AI770119, AI824725, N31270, AA421935, BF352616, AI027376, AA233026, W39547, AA918822, N25640, BF352611, AI027020, AW876088, N39100, AA911009, AA836812, AA992896, H04053, AW876064, AI002479, R55560, AA970541, AW995402, AA332109, AA806318, AA759257, BF885893, BE177081, AA232852, AA593839, AV697997, AV695832, AI797333, R68540, AV690252, H68957, BF926234, AA485458, N22883, AV734002, AA337924, BF820595, BF926247, AV694870, BF820597, AA384849, W44899, AW241214, H65584, H03366, Z19311, R67924, R55321, T67446, AW243674, BE048922, N70432, AA017389, AW876067, BF759974, R68246, T96801, T96685, AV696911, AW965295, AW876091, BF927515, BF820591, AA376097, BF763395, AA236633, AA994146, AA336479, R36914, BF858626, BF755224, F00568, N48457, AA282020, AA094925, BF735336, T69479, BE714862, BF126700, AW103805, AW799660, BF924148, BE165021, BE542967, BE161951, AX013176, and AC009778.
HVCAA65	743	1048595	1 - 1131	15 - 1145		AL521488, BE794903, AL521487, BE563119, BF311687, BF663525, BF316035, BF972207, BE379400, BE733903, BF969940, BE379536, BG177397, BF663800, BE741051, BF971998, BE729168, BE736783, BF973389, BE745021, BE909578, BE733626, AI660852, BG248225, BE901526, BF974412, BE795026, BG119307, AI417797, BF032519, BE787609, BE535312, BF308375, BE379343, BE897445, BE515175, BF982093, BG034587, BG031389, AI884769, BE873096, AW189946, BE407248, BF439454, AI884696, BE735454, BE265534, BF033418, BG164975, AA779721, BE383460, AW467291, BE892125, BF685536, AA886993, BE410832, BE254532, BE262168, AW964964, BE892855, AW001586, BE536855, BE736274, BE222590, AI224897, BE907203, BE395007, BF432624, AA521312, BE251359, BE620472, AI394546, BE620877, BG256162, AI018808, AA520988, AI951973, BE255086, AI301892, BE392541, BF382865, AW247221, BE545214, AA866196, BE302496, AA594969, AI015226, BE790135, BG112878, AW246255, AI457658, AV709367, BE207409, AI680866, AI185022, AW410905,

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HSPSI76	744	1048635	1 - 1565	15 - 1579		AL529145, AU133429, BE867986, BG252333, BE271706, BE740302, AU117989, AU120241, AU122034, BE271984, BF203856, BE867492, AU137105, BF303688, BF307688, AI752379, BF244040, AW886218, AW886128, BE833911, BE299053, AI278609, BE868368, AI457850, AA187381, BE742959, AW886280, AW239196, BF923339, AA121094, BE833947, BF869810, AA829366, T76935, BF770427, R21366, BF508501, F13103, BF370227, AA375513, BE909941, AW886183, BF868618, AW177718, W48584, BF035356, AA931695, AA634901, N42517, AW754090, BE244022, W81160, AW089800, U90441, A87005, U16163, L81778, AC000960, AC063976, L81779, L81775, L77044, L81777, AC002195, and L81780.
HVVCH35	745	104865 8	1 - 1309	15 - 1323		AI719545, BF116178, BG248226, BE886380, AW024407, AW081534, BF207082, AW003531, AL044449, BG250696, BE538221, AI885407, BE784939, AI553796, AA613650, AW246550, AI921772, AI673517, AW082921, AI417178, AA490655, AI340075, AI214250, AW263806, AI560048, AA595365, AW960860, AA580265, AW872780, AI360297, AI870293, AI829934, BF036691, AA490654, AI827461, AA857878, BE537572, AI360358, AA846693, AA001318, AA374910, BE314431, AI318298, BE837126, AI085813, AI376538, H27782, BG007963, AW135529, T07218, AA948279, AW074629, AA568231, AA910140, AA297010, AI494449, AW248341, AA953262, AA832012, BF511306, AA297016, AI423518, BF529929, BF244493, AA906871, BE884493, AI383030, AW150846, T30682, AI140575, AW025214, AA001905, AW407144, AW248342, C01279, AW152182, BG181066, AW149925, AI619502, AA911767,

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HOFNI66	746	1048739	1 - 1445	15 - 1459	AL530216, AL521109, AU142923, AU124020, BE620897, AL530217, AU139055, BE614285, BG249413, AU117715, BF791855, BF792043, BE905897, AI497784, AI079885, AI627724, BG115303, AU136535, AW027189, AI161162, BE620496, BF238205, BF793082, BG115364, BF674174, BF211375, AV655959, AI755104, BE873639, BE274185, BF978983, BG024148, BE909026, BE909886, BE613569, BE179535, BG165236, BE709660, BF027043, BE255543, BF211390, BF671615, AI858095, BE382569, AI858089, BF698299, BF674668, AW303647, BF679395, BF130367, BE872201, BE564380, BF668512, BE886397, BF686410, BF530535, BF696552, AA888140, BF031198, AA308340, BF668978, BE709627, BE903870, W63800, BF976812, BF672839, AV701080, BF184137, AI299948, AL047241, BF665241, BF184254, AW949833, BF027849, BF209984, BF698050, AW381010, BE179583, BE710076, AU128945, BF240933, BG057708, BF184002, BE886398, BE018338, BF668825, AI609570, BE865979, AI269439, AA541733, BE179848, AU151158, AW173704, BE179837, BF575945, W56342, BE880225, AA400690, BE958179, BF184743, AL048187, AI424970, AA907800, AI637570, BF677814, BF698677, N25016, BE961148, BF243189, BE301821, AI128409, AA455688, BF977839, BF675341, BF206562, BF110242, AI347125, AU160114, BF381932, BF028808, AU157870, BF030745, BE179773, AI309277, AU156768, AI342535, W31858, AI697500, BF132213, BF107247, W37254, AI279003, AA043048, AI284914, AA308417, BE709419, BF214757, AW194139, AW630565, AA316857, AI738894, N31020, BE709376, H98801, AW381028, AW080729, N29020, AI285055, AW263113, AI281272, AA042809, BE180002, BF209075, AA455635, BF030408, AA677062, BE179396, AI888237, BF669378, BE709506, AA053138, AA679690, BE709422, BE180004, N20648, AA630049, BF214514, AA625708, AI697336, BF477504, AA738269, AA984024, AA505758, AW304756, AW168326, AI299638, BE709796, AI886825, BE709521, BF209013, W03507, W39286, AI051020, BE241819,

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HMSKI90	747	104879 2	1 - 3315	15 - 3329	AV719955, BF346320, BE796439, AL040921, AL042905, BE538259, AL135377, AV714931, AL042906, BE541237, AV759046, AV764490, BG032943, AU119532, AV761286, AA330079, AV756726, AW600804, BF826830, BG028665, AW963982, AA577824, AV719941, AU157011, AV760723, BF850080, BF805173, AI054414, AV699393, BE067011, AV700663, BF828714, BF980390, AV764201, BE297356, BF917486, BF876683, BF982222, AW243793, AI791227, AA742815, AW965008, BF901147, AA487475, AI457389, AI061646, AV710705, AI133516, AV718718, BG056362, AA126635, AV722075, BE676158, AA736713, AV719402, BG260565, BG171097, AU117926, BF679792, AU148007, BE867712, AL042282, AI016192, AL041706, AW963473, T07254, AL042310, AA640277, BE883679, AC005066, AL158167, AF067844, AL109759, Z98036, AC007198, AL009051, AL360227, AL138478, AL161804, Z73417, AL049650, AL133163, AC011362, AF198097, AP002535, AC004847, AC018755, AL138812, AL133500, AP001720, AC004448, AL049870, AL132988, AC012467, AL022318, AL358372, AL138783, AC016644, Z99496, AC009169, AC027312, AL121933, AL132708, AC010186, AL121984, AL137793, AL161422, AC020717, AC006334, AL163248, AL022147, AC008701, AL133405, AC007207, AC002981, AC006511, AL035661, AL035411, AC026371, AP001688, AL139395, AC005062, AC004898, AC008083, AL121895, AL031432, AC005252, AL080316, AC006441, AL135783, AC012596, AC001231, AC004609, AC055736, AC019226, AC008555, AL031673, AL034400, AL158141, Z93023, AL020994, AC008551, AL139109, AC000085, AC007151, AL135932, AC006461, AC007385, Z84480, AL035703, AC009414, AC009501, AL031315, AC005280, AL136303, AP002898, AL445189, AL136531, AC009455, AC005901, AL110502, AC004981, AL031287, AC008163, AC034207, AL121574, AL109854, AL078477, AL161627, AL133548, AC019106, AC073934, AC011310, AL031054, AL137000, AC009039, AL162811, AC009484, AC007365, AL137072, AC006205, AC018637, AP001747, AP001716, AC005840, AC005702, AL136097, AL050321, AF227510, AC005064, AL049712,

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HSYBI49	748	1049151	1 - 1181	15 - 1195		BF971178, AI801638, AW960418, AW089881, AA484795, AI700113, AI452474, AI220875, BF747974, H03348, BE161880, AW607780, T79392, AA305424, AI392810, AA375432, AW366425, AW753216, H95362, AI950113, H04030, AA375883, AW964468, AW975618, AW966389, AW966330, AW949645, D59859, C14331, AW959570, AV724520, AW964532, C14429, AF134160, AF101051, AF115546, AF072127, AX047063, A62298, A62300, AR018138, A84916, AX047064, Y17188, AX033851, AX047062, A82595, AR070327, AJ132110, AX027925, AR008278, AF058696, AB028859, AR087649, Y17187, AJ302649, AX021518, X67155, D26022, AX035434, A25909, A45456, AX028130, Y12724, AX020191, A67220, D89785, A78862, D34614, AX020190, AR060385, X82626, D88547, A94995, AR077702, AR008277, AR008281, AB002449, AR025207, AR062872, AR008443, A30438, I50126, I50132, I50128, I50133, X68127, AJ294956, AR066488, AR016514, AR060138, A26615, AR052274, AF260572, AR074139, Y09669, A43192, A43190, AR038669, X64588, AR066487, AR074136, AR074545, AB012117, I14842, AR066490, AR054175, AX015396, D50010, U79457, AR016691, AR016690, U46128, I18367, A63261, AJ287395, A85396, AR074141, D88507, AR066482, A44171, AR088705, AR008408, AR091537, A85477, I19525, A86792, A70867, AX042372, AR093385, X93549, AR092424, I79511, D13509, A64136, A68321, AR060133, AR060382, AF123263, AR032065, and AR008382.
	749	1049372	1 - 4778	15 - 4792		AL519559, AL519558, AL527064, AL529172, BF526686, BG028577, AW361267, BF968057, AW242432, AI140620, AW511249, AW963605, AI718250, BG251031, AW003986, BE502055, BE743451, BE895620, BG034822, AW962766, AV682376, AA194091, AL527023, BE545462, BF433041, AW262697, AI949518, BE408503, AW298082, AW977283,
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HMUBT31	750	1049466	1 - 2784	15 - 2798	AL529514, AU117125, AU141494, AU138413, AI065140, AU138493, AU138619, AU137502, BE866979, AW749876, AI065091, AU128037, AW749892, BF971017, N99167, BF212188, AU128304, BF094612, AW074186, AW073330, AI434820, AW966409, AW272690, BF888339, AU129573, BE315355, AU127159, BF110128, BF888340, BE293259, AW119058, AI521964, AA488588, BF970200, BF207886, AL046614, AI261605, AA424119, BE467152,

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HFPDO90	751	1049644	1 - 798	15 - 812	AA932194, AW179324, AI002307, AA663765, BE735168, AA491586, N41413, BF684301, BE407935, AA808457, BF512968, BE280480, AI299979, BE256643, AA770648, AA770650, AI343871, AW117478, AV751916, AI814515, AI299232, AA977173, AA740169, AA812938, AI494283, AA745845, AI190633, AV715190, AA843156, AA722697, AI129338, AI041107, AV753001, AI355668, F37023, AI363131, AV716996, AW005664, AA724428, AA308774, AW239094, AI084918, AA576396, AA315816, W73052, AI022229, AI266102, AA701641, BG054985, AA699317, AA884817, BG112117, AW161517, AA598700, BE382489, AA704484, AA809658, AI344352, BE386254, AA533144, AA947950, D54718, AA524092, AI709080, AW163628, BG036860, R97788, BE855958, AA707907, W81385, BF791890, BF685089, AI128584, D52875, AA114924, AI768222, BE728298, AV722473, AA491874,

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HVVCB79	752	1050102	1 - 2470	15 - 2484	BE747975, BE742186, BG251921, BF568088, AU131687, BE742275, BE877571, BE889874, BE620141, BG250663, BE877012, BF568926, BE877476, AI088434, BE910200, BE907736, AU128113, BG035185, AU135252, BE897378, BG251285, AA621667, AI346645, AW263010, AI625220, BE909297, AI609518, AW276382, AW304172, AI858601, AW029222, AI608891, AI813425, AI827115, AW074235, AW082804, BG255684, BE889213, AI985831, BG254622, AA669865, BE880196, BG167056, AW514153, AW170309, AA618054, AW770869, AI795849, BE644838, AI963363, AI623888, AI683880, AI281027, BE350615, AI828889, AW192796, AW316981, AI818478, AW188700, BE874867, BG117904, AW183022, AV733886, AI144179, AA738239, BF842504, AI955571, AI128137, AA975350, AA523124, BF439985, BF737320, AI952102, AW339226, BF845854, AW337829, AI589258, AA781230, AI682815, AI348149, AI000902, AA931097, AI187264, AA745890, AI554320, AA161208, BF941366, BF737329, BF873834, AA284668, AI304724, AW369971, BE881723, AI591155, AI149294, BG252387, AW083724, AI274754, BE812907, AW026240, AA969848, AI750653, AI433158, BF431937, AA158743, AW607441, AI350439, BG164051, AW192073, AA157530, AW238819, BF845974, BE879598, AI357834, BF515581, AA464119, BE909634, AA883794, BE906788, AW176385, AW748239, BF739013, AA554892, BE880565, AW337353, AI910051, AW362693, AV733276, AW362669, AW062307, AI750652, AI188344, AI370440, T89676, BE049540, AW815717, R74284, AU155926, AW815722, AI766050, AW854759, BG250066, AW815687, BE179232, AI431334, AA100117, BG249995, AW662078, AA284669, AA583615, AW748238, AA973099, T29593, AI750507, BF874455, AA463985, AA192627, BE710195, AI273199, BE172625, F06065, BG007464, BG119139, AI269833, AI702408, R24159, AI583131, BE165427, AI624229, AA040727, AW338259, BF087461, T19421, AW362710, AA345817, BE176089, AI471394, AI686279, AI702510, AA894583, BE173387, R39975, AI589449, BE706368, AA886172, BE171903, AW081126, BE176258, AW362723, AW362732, AA195849, AI915757, BE175993, AI754103, R74194, AW749528, T19420, AA906982, R27515, AI932864, BE879632, BE812877, BF921111, R80161, R10151, BE714639, AI269834, BE813015, BF087509, BE714920, BF087520, BE714923, BE714915, AA039591, BF588735, BF909056, BE165002, BF825751, AA158183, BE876449, BE714916,

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HVVDX63	754	1050256	1 - 2470	15 - 2484	BE615956, BE615456, BE615194, BE615842, BE615175, BE563187, BE615830, BE563326, BE616557, BF975225, BF968560, BF662845, BF974277, BE745255, BG258410, BE736088, BF308859, BF338536, BE736226, BF204392, BE614547, BE311934, BE616731, BE736359, BE614066, BF305803, BG111345, BF129216, BE615389, BE872603, BE616684, BF204544, BE736565, BE298823, AU139821, AW951126, AI356644, BE742184, BF183184, BE389115, BF304499, AA777030, BE298664, AW608326, BE301081, BF975931, BG166913, BF846393, AW815339, AI350705, AA429608, BE614732, BG248798, BF002901, AI857991, BG057397, AA234842, AA534828, AA789300, BE645797, AI074602, AW408426, BE735594, AA393482, AI276670, AI567492, AA479849, AI285621, AI275879, BE737486, BF912790, BF478059, AI095543, AI022763, AA766637, BE042491, AI208279, AW102930, AI032377, BE677333, AI784601, AA617779, AI628301, AI690885, AA397621, W39701, AA873371, AW269708, W39703, W81460, AW815569, AA613045, D82095, W45055, BE966085, AI275494,

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HNOJA87	755	1050282	1 - 2924	15 - 2938		AL528169, AL535044, AL528170, AU131181, BE612946, BG105002, AU135757, BF056657, BG171550, BG033825, AI479941, AI355267, AU131478, AI189439, AU134843, BF667911, BF677918, BF672445, BG165663, BE079463, BE536085, AI955006, AW471118, BF244058, AV702059, BE221662, BG121124, AW382750, BF696174, AA927437, AW151212, BF107560, AU132059, AI819834, AW953778, AI609284, BF698990, AI859794, AW439324, BG030945, AU139994, BE612496, BF028646, AI206535, AA860250, AI831104, AI742145, BE813327, AW966808, AI956036, AL135266, AW367356, AL036155, BE876988, BG252879, BF126329, AI720945, AA994665, AI743900, AW993504, BE566902, AA664184, BF060653, AI687733, AA173561, BF799366, BE535901, AW379843, AI653816, AW367281, BG111300, BE567331, BE865972, BF572976, AW835282, BE694658, BF576110, BF132692, AI090217, AA629687, BF673893, AI149995, BG032487, AA081847, AU153674, BF092922, BF247055, AI299830, AI707818, BF670498, AW387918, BF675455, AU158254, AA946803, AA633514, AI147273, AA425997, BF840663, AU155668, AI276038, AI879555, AI804246, AW439334, AI567777, BF092879, BE388238, AU156261, AI880793, BF838803, AI735680, BF838796, BF793693, AI276669, AU152974, AI344762, BF840775, AI859784, AA642439, BE885399, BG170726, BE885385, AA261974, AV655055, H06260, AI095469, N31351, AI879172, AI123856, AA904011, AA400199, BF839703, AW379309, C75199, AA461594, AI150095, BF092870, BF840784, AA400360, BG170799, W45460, AI753004, W45505, BF240790, N21396, BE762409, AW862124, N27476, AA434134, AA774539, AA297332, BE762380, BF211905, BE566602, AA084443, BE702058, AI432961, AI439952, AA088269, AI039241, AA363799, AA687881, AA757780, AI149443, AA088377, AA425792, AA716770, BF092862, AI587227, BF092859, BF883837, AA666166, AI694247, AA037565, AA666252, BF922973, AW089309, AI174215, AI285541, AV697011, BE150667, H88419, BE775018, T40915, AW023229, BF840777, T83573, AA297916, AW020753, BE071395, AI186553, BF149317, AW675220, H95457, AI216872, R52751, C04099, AA363800, AI696248, AA806908, H66112, BE544848, BG015556, AI003224, H06261, C75103, H88359, BE932943, N93320, AI475318, AA298199, BE004156, AA101870, BF438939, AA298660, BE071333, R15217, BF753802, AA761472, AI572307, W25142, BF935223, AA894878, BF508277, AA297827, H66066, Z42814, AA173725, R52700, H88085, BE150666, H95456, W40496, AL535043, AA305188, AW364994, W40505, T85599, BG254457, AA516125, BG223547, AA065145, AA064868, T48493, AI300725, H88086, R78625, AW674695, C02996, AW496824, S74017, U20532, U70475, AF037350, R41655, R41655, W40502, W45509, AA032072, AA034284, AA099411, AA730470, AA954636, N86667, T10535, Z38956, AI866062, AW238674, and AW512933.

HTPGI65	756	1050419	1 - 1942	15 - 1956	BE794085, BE867150, AU139367, BG035892, BE798073, BE905298, AU134218, BE410038, BE791248, AU134164, AU133688, BE267301, BE263771, AU134441, AU136368, BF883784, AW939369, BE615551, AU133625, AI570386, BE617323, AL048426, BE901240, AA829453, AU138841, AU134497, AA773562, BF736859, AU155458, AA316446, AA526833, AA928680, AA989350, AI984236, AA856540, AU156680, AI493598, BF823301, AW374387, BF879247, AA838496, AA917642, AU154920, BF736850, AA085539, AA410796, AW630746, BE463463, AW579379, BF882778, BF883729, AI690718, AW375908, BF879765, AA524154, AW873172, BF871812, AW614779, BE185875, BE832918, AW610430, AI310958, AI923663, BF882696, AU154875, AA838036, AW841181, AU155421, AW627527, AW103093, AL523362, AU155263, AW166893, AA291982, R73021, AA535477, AW629697, C05826, AA434373, BF871737, AI079149, AW604936, AW604933, BF736876, AI350214, AA410979, AA477878, AA069015, H45108, AU157980, T78438, AA548457, AI768934, AW604915, BE873506, R50495, AA477768, AW610384, BE715674, AA433851, AA284998, AA658311, AW752319, AA327429, R53022, AW294177, AI962062, AI583114, W31277, BE049489, T27397, H12607, AI972575, BE049465, AA357493, AA573883, BF854491, T86854, AA887199, BF877001, H27939, AW780166, BF036867, AI796580, AA366722, AA159295, AA410813, R73022, AI355006, BE814771, AA159390, AI811476, R81651, AA299295, H12657, AA121219, AA366746, BF762334, AI445787, AA470893, BE068878, AA367063, AA375474, AW469397, BE001670, AI569291, AA581226, AA069080, AA369935, AW368396, AU120380, AA514641, BF209520, BF820420, AA366871, AI910605, AI363744, AI355133, AI269794, AI590047, AW964534, T30792, T78501, AA235458, R50578, H27938, AA299413, AA527542, R81448, BF763266, AU076709, AA132363, BE832780, AI453001, D25596, BF333621, AW190664, AW175766, AW793307, AW263603, AI683392, AI696755, AW518881, AI287501, AI985615, AI355010, AW192142, AA508837, AW572337, AW058307, AW572444, AI250069, AI589747, BE185617, AW474895, AI369021, BF810856, AI269797, BF804202, BF915914, AW074208, BF804203, BF333622, AW673409, BE827888, AI185429, AI798394, AI758335, AI888925, AI758947, BE962213, T11411, AA419371, AI610219, T10435, BE617806, BE827856, AW375906, AA478200, AI684039, AI744994, BE839809, BE140587, U73843, AR020776, AF017307, AX048151, U97156, U73844, AX017308, AF110184, AF016294, and AF287266.
HHFGN14	757	1050536	1 - 3333	15 - 3347	BE616112, BF792009, BF311929, AI039583, AI539772, BF797018, AV652556, AI911696, BF337750, AW328182, AL039415, AV709890, BF341677, AI924929, AI024590, AI799360, AL047238, AW151199, AI610202, AI354867, AW264758, AL047276, AL047492, BF725615, AW372255, AI620267, AL048362, AW242103, AW118263, AI860374, AA576772, AA464454, BF967859, AA534442, BF967317, AL048103, AW362999, BG059706, AA394278, AA579402, AI129572, BF741330, AW150084, AA905545, AA918638, AW072583, AI445594, AI042547, AA953112, BE044458, AA614134, AI089102, BE677448, BG059650, AI270652,

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HTAIN76	758	105055 3	1 - 1664	15 - 1678	BE379181, BG248320, BE394344, BE304882, BE870646, BF342593, BE869659, BE395299, BE378779, BF347272, BE867897, BE304851, BE273083, BF034604, BF528940, BF348521, BE315252, BE394405, BE869523, H11951, AL039694, AI087281, R12830, BE273008, AW800353, BE741880, BE395735, AV695990, BE871000, H58758, BE410611, AA158857, BE273259, BE764627, BE740366, BE563582, H97070, M78038, BE255407, W30987, AA377820, BG251142, BG164164, BE744662, D31501, R06968, BF569502, BF569624, H22720, W78867, BF746701, BE874990, BF529027, BE781411, BG166165, BF688742, BE383214, BE394738, BF821988, AA179431, N59613, AF016903, AX011664, M64780, AR043380, and M92657.
HLYBO89	759	105070 2	1 - 1095	15 - 1109	AI681294, AI694310, AV733516, BE379742, BG167007, AI640172, AI074606, BG121897, AI670881, BE797790, BF940039, BE741302, BE742046, BG163770, AI858065, AI681393, BF984484, BE790111, AI400174, BF978941, BF973090, AI761953, AI910439, AI089029, BE048642, BF219348, BF670338, AI670873, BF247903, AW614075, BF245676, AV723510, AI991986, AW262850, BF542114, AW951106, AI457787, AI431584, BF213100, AV733272, BE866235, AA582224, BE293715, BE293433, BF197587, D56385, AI681691, AA459997, AA282970, AA632011, BF208865, AI769114, AA460091, AI091029, AI375169, BE958578,

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HMEKJ82	760	1050767	1 - 583	15 - 597	BG037143, BF676815, AL527704, AU125963, BF028753, AW408138, AA952954, BE782652, AV763225, U26424, U60206, U28726, AJ001529, AF271361, and Z25422.
HOFNX17	761	1050969	1 - 669	15 - 683	BG167328, BE565189, BE789424, BF243458, BF215528, BF973004, BE738025, BF244163, BF665298, AU135381, BE738188, BE567581, BF107150, BF971769, AA129310, BF686527, BF573009, BE882050, BF685893, BE889391, AU136700, BG118456, AU139656, AU137801, BF981334, BE883571, BE885625, AU138337, AU137564, AU137423, AU135571, BE885645, BE886273, AU138129, AU139930, AU135525, BE882507, BE889674, AU138813, BE885940, BF340792, BF219314, BG117049, AU137131, AU139496, AU136839, BE395726, BE613877, BE784318, AU122831, AU139272, BE890074, BE889354, BE393571, BE019690, BF672909, BF091549, AV756671, BE890028, BE889618, BE785202, BF790680, AU135762, BE883722, BE890010, AU137370, BF672419, BE869220, AU135495, BE888097, BF673438, BF029110, AU138607, AU137127, BF972534, BF246106, BF130804, BE883891, BE566362, BE787422, BE613536, BE746626, BG164494, AU117349, BF245980, BG121662, BG121427, BF980639, AU135221, BE890043, BG111978, BF245291, BG036076, BE777467, BG119474, BE886256, BE884608, BE888717, AW950757, BE439455, BF683998, BF107275, BF696507, BE613538, AU122830, AW366472, BF107233, BF979239, BF698764, AV757833, BF349437, BG250298, BF671133, BF037244, BF700315, BF672562, BF031223, BF084959, AW366471, BE865476, BF349429, BF217501, BE567062, BE567857, BF696793, AV716650, BF218154, AW366486, BF685662, AV714843, BF243102, BF217410, BE546162, AV757230, BF680563, AV717869, BE160289, BF242795, AV756534, AW366462, BF245428, AV734845, BE160277, AV716730, AW366477, AV757969, AV755997, AV761675, AV763314, BF245840, BF209181, BF242088, N79355, BF218920, AV756589, AV713049, BF572307, BE886383, BF214785, W80546, BF692781, C18232, BF107418, AU138502, AU134300, BF241022, AA348570, BE928764, AA852087, BE565641, BF243032, BF028253, N85304, AV747314, BF149206, AV714294, AV748590, BE884043, W07418, BG010285, AA095823, AA344036, R95461, X56649, U24656, I02238, AX004164, AX004167, X95108, E01979, and E04245.
HAOSY21	762	105109	1 - 719	15 - 733	BF684581, BF342950, AW957686, AV722375, AV723295, BF237688, AV707099, BE296762,

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HMWDB39	763	105111 5	1 - 4711	15 - 4725	AL527816, AL533334, AL533288, AI132991, BE738228, BG034053, BE739552, BF984110, BG260492, AV755413, AW964005, BE560912, BG170764, BE891685, AW608050, BE277616, AW608063, AW608053, BF305030, BG164154, AW608056, BE069945, BF969279, AW876488, BE387593, AW386751, AW608048, BE883205, AW608054, AW373467, AW373475, AW876491, BE893625, BG032180, AL134864, AW608046, AW876498, AW373468, AW134836, AW876490, AW369558, AW836244, BG106325, AW386747, BG032622, AW373476, BG121952, AW369560, BE896621, BE566580,

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HAOSZ53	764	1051246	1 - 1325	15 - 1339		BG116754, BE742356, BG169741, BE737394, AL536737, BG035700, BF529756, AU129386, BF569781, BE906445, BE888309, AU126226, BG164594, BG112518, BG120249, BE390387, BE908319, BG104445, BE786862, BF529755, BF345037, BE272295, AU139884, BG032038, AW954508, BE385393, BF570296, BE536063, BE563539, BE886236, BE907551, BE733035, BF971649, AA292422, BF569789, BE874289, BE884694, AI346755, BG118789, AA477693, BF679397, AA526490, AI937163, AW007343, AI421549, AI186858, BG170016, BE884242, AU158211, W73114, BG163524, AW071883, AI921806, AA293715, AI677767, AA434504, AI635865, AA525971, AI245616, AI923979, AW673927, AI336339, AI982909, BF130225, AI087176, BE042450, AI566913, AW971941, AA430468, AA143240, AI042262, AI924324, AI283781, AI748862, AA405242, AL536736, W58109, AA434406, AA884449, AA477694, AA437352, AW583877, AI149950, W94126, BE150951, H30230, AA137204, BE150896, AA910258, AI569011, AI038000, AI351681, AA278265, AA505519, AA100354, BE242836, H30675, AI000002, W58219, BG261250, AA427618, AI640789, BE280007, AW965577, AI160137, AA480675, AW675091, AA402964, AI264832, BG008682, W05533, AI418798, AA143299, AI040251, AA002196, AA505527, BG107498, AA329214, N76134, AA631327, AA307966, AA864701, AA137267, H28117, AI208509, BE393546, R48090, R50206, AW080323, N31266, AI342175, R78352, AA054747, AI750670, AI620791, T66846, R26643, AA100305, T77309, AI199378, AI648478, F13345, AW583507, AA873206, AI520788, AA484092, AI625948, F36535, Z44621, T48631, AW000713, C04757, T60738, AA002067, R47978, AV707282, BF247764, T66845, H97612, AI470990, BG167362, R49672, T34246, N87910, H06178, AA514312, BF745589, AA394089, AA379308, BF247881, BF570302, AA627384, N36593, N22880, R50152, AA278732, BG014014, H90261, F30847, AU126761, BG009210, R32286, AW082510, AA054745, BF743515, AW271186, AA258044, BE925169, AW192387, AA429125, T08566, T06887, BF852854, AI567068, AI671642, BG163239, BF213477, AI263331, AI800171, BE907414, BF338002, BE622183, BF814447, AI800159, AW827276, AV758825, BF793324, BF525838, BG122101, BE880182, BE540578, BF038131, BG256592, BG032036, BF970449, BE047852, BF338723, BE876033, BF822127, BE874133, BE612681, BF529881, BE536058, BF032910, AW673679, AI273179, BG110517, AI620284,

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HSODP14	765	105125 6	1 - 629	15 - 643	AL533304, AW962800, BE969850, AU126185, BE379997, AV726266, BE782375, BF725147, AL045011, AL045003, AW996063, AV649739, BE540171, AW303509, BF382925, BG108051, F06685, AV701826, AW992687, F05888, AA371304, Z43171, BF951650,

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HPYSC40	774	105215 8	1 - 822	15 - 836	AA779751, AA476904, BF056494, AL047797, AA436220, AA402723, AA291495, AA293088, AI151391, AA452764, AI188355, AI086276, AA477016, AW296294, N30652, AA706816, AA436221, AA404631, AA433965, AA293479, AA235001, AA478226, AA495907, AI276581, AI246448, AI420208, AW044154, AI080180, N42277, AA252967, AI474212, AA463721, AI274168, AI092818, AA452585, AA495908, AA402883, BF446967, AA854990, T28299, BF507811, AA635664, AI420297, AI742059, AA434011, AI092114, AA405395, H52337,

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HDDMT56	775	105226 1	1 - 940	15 - 954	BE791889, AV717926, BG111059, AW026224, BE731340, AW129431, AW044302, AW044311, BF969263, AW026502, AI024363, AV764439, AV755780, AV703541, AV756180, AW005536, AV756181, AA044591, AV717648, BF698603, AA044836, BF185808, BE858602, AI884653, BE566092, BG236392, W73840, W72164, BE568051, BF446110, BG030132, BF432321, BG231607, W74588, AA584411, AA044721, BF438576, AW361071, AI359202, BE695891, BE045437, AW968454, BE857732, AW952892, AI400180, AI127248, AI361026, AI351761, W73696, AI361044, N93769, AW853077, AA188813, AI346887, AI873700, AA476929, AI564814, AI148800, BE960901, AW576052, AA844073, AI580492, AI359751, W15164, AI871309, AI159826, AI090121, AA459134, N56635, N92789, AI125882, AA936153, AA477040, AA844279, AA627857, AW026355, AI285239, AI024076, W20518, AI193641, N95574, AA130015, AI041348, AV756064, W07735, AV708855, BE728941, AA410661, AA706702, AI359593, AA722839, AW004870, AV707248, AA829863, AI202724, AI276819, AA431145, AW978868, AA432164, AW627741, AW592913, AI199842, W39004, AI193714, W39225, AA291941, BE972734, AI056225, AI344438, N80763, AA988362, AA383031, R99845, BF130957, AA445991, N78715, AA627324, AI500185, AI205678, AV653961, AA864928, AI589231, AA309919, AA293627, AA962487, AI474384, N29679, AV660336, AA130014, W24818, AV698101, AV660285, AV660175, AI077593, AV660215, BF351943, AW016040, AA651617, AA009876, C04433, BE766092, AI342842, AA747913, AA446267, C04962, AW020834, R23666, AA355416, C02690, N92536, AI561151, H56634, AI051799, AW407061, AA111947, AI420808, H99820, W07552, C05537, N24516, AI474400, AA280534, BE843719, AA315628, AA383032, AA382428, AA009528, BF740125, T80744, AA749010, N87803, BF208266, AI139832, AA085812, F26702, C05473, AA044811, N49380, T84122, AI867943, AA747825, AI687396, AA832270, AV650894, AA565864, AI083802, AI146601, AA342414, BE350230, F35829, AA731123, N49470, AV718225, H30789, AA235564, AW999222, BF242556, T89356, T80634, AV736105, AA937994, AI445396, BG165709, AV736287, AA731103, C01741, M85658, AW877209, AW979127, AL134524, AL119324, AW969680, AW975037, AW975002, AW969816, AW975031, AW972845, Z99396, AW971975, AW974801, AW979238, BF868697, AW979204, AW975876, AW969673, AW975952, AW972292, AW976024, AW975019, AW979002, AW971403, BG058418, AW975632, AW975032, AW975954, AW975965, R99846, AW974786, AW975154, AL119457, AW976023, AW971968, AW975628, BF868687, AW973717, AW974964, AW972867, AW969643, AW975027, AW979098, AJ250393, AF110775, AF161497, AJ250394, AX017873, AR066494, AX046357, AR060234, AX030435,

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HVVAW02	776	105255 3	1 - 872	15 - 886	AL537587, AL529658, AU123248, BG111713, AL536888, BF528711, AU137828, AI421201, BE904707, BE791254, BE745009, BG109317, AI570622, AI570004, AI989579, AW961469, BG108425, BF383127, BE176810, AI833038, BF696193, AW468544, AA779618, AA594978, AW009553, AI560971, BG230611, BE264327, BF589342, AA700346, BF031165, AV705472, BG119892, BE551429, AA236469, BF217607, AA975622, BE855531, AI241179, AV724761, AV705812, BE176927, AA232654, AA425074, AW304107, AI089284, BE884892, AI368096, BF697812, AI348181, BF668864, AA186811, BF817290, AI766352, R35279, AI142922, AW886555, AA584043, AA974548, AI124517, AA282137, AI400118, AW297715, AI057075, AA701672, BF154541, AI272148, AA772928, H53622, R53868, AA514023, AA531591, AA316638, AI333059, AI924107, AA641382, AW886216, AW886217, H74214, AV720966, BF060965, AI818718, AW934891, BF737115, BE833950, AI367803, N70079, H53661, AW886135, AW886133, R66643, BF737112, BE833954, BF090575, T87908, AA971632, AA703463, AI864207, AU124815, AW959681, N62470, AW888886, H16343, AW998773, H60947, F15800, AA533438, AA332062, AL039198, AA310143, AW360979, AA614390, AA621437, F11167, AI937689, AA332239, BF245833, AI538144, BF932809, AV722305, BF760088, AA665032, AA365208, AI630339, AW768928, H73698, T88002, BF760401, R20909, AI830513, BF575067, BF932781, BF887248, BE763671, AA365209, AV702237, BF760085, AV704383, AA344255, AW372989, AA363457, BE767071, BF216049, AA216158, R50400, R47763, F07468, N79190, R67362, N73190, BE242768, BF247762, BF764294, BF670200, BE695812, R20797, AW902331, AA361116, BG231332, AA234237, AW373134, AW834746, AW934899, AW888862, AW386061, AW888860, AW373135, AW373133, AW934906, BG033243, BF129853, L12387, M32886, X04656, AC005075, AL121872, AC013412, and AC003991.
HOGCS42	777	105255 7	1 - 1746	15 - 1760	AL526995, AU133713, AU122264, AU133716, AU133898, AU133901, AU121966, BE792903, AU141449, BE786350, AU133817, AU136746, BG254161, AU133578, AU133887, BE907881, AU121817, AU133655, BG260814, AU121969, AU133752, AU136516, BG179180, AU133916, BF038418, BF037422, BF036516, AU134354, BE734836, AU138430, BE873066, BE875603, AW844114, AU133630, BE616872, BE880804, AU122380, BE871117, AU134380, BE871864, BE902820, AU134369, BE536853, BG256045, BE304643, AU133618, BE787818, AA523290, AU147972, AU138507, AA700004, AI927220, AW170580, W74492, BE812430, BF446247, AU147690, BE870378, AI859845, AW935041, AI991311, AA522795, BG254485, AU136509, AI081052, AU155374, BF681403, AA535079, AU159009, AI400364, AI335984, AU147886, AU155390, AW193221, AW874638, AU155077, BE564185, AW170345, AA622540, AU155064, AI273767, AW474974, AW770097, BF445088, AW168283, AI188508, AA565989, AI559433, AI420481, AI246782, AU157642, BF182989, BF825787, AW815382,

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HAZAA59	778	105259 3	1 - 2872	15 - 2886	AU131675, AU124734, AU124657, AI808845, BE257123, AW838589, BE782010, AW362327, BG256702, AW362326, AI472139, BE819550, BG176935, AV705474, BE889998, BF798197, AW838581, BF038729, BF061399, AI360345, AI018260, BG109936, AW970171, AW608204, AI333379, BE819506, AW022268, AI923334, BE819539, AW964332, AA760946, AW958553,

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HPDRP02	779	1052728	1 - 1627	15 - 1641	AI127173, BF689120, AI833019, AI299951, AW950053, AI796694, BF569958, AI207840, AA905294, AI677681, BE395678, AA595291, AA595194, AA496648, AI185277, AW514815, AI267900, AW172940, AA541745, AI672913, AI191324, AI457407, AI749865, BE612917, AA541667, AW474854, AA932637, AI459873, AA936956, BE501657, AA600983, AW008141, AI813527, AA437336, AI813526, AA427585, AW970526, BE391199, AI769112, AI188975, AA706831, AA954972, AI521390, AI812098, AW170020, AA595356, AW068546, AA976022, AW001580, AA600270, AW130267, AI587132, AI635503, N39646, AA564063, AA995165, AI750626, AI080529, AI707459, AA743928, AA599926, AA447630, AW967399, AI749142, AI371879, AA552327, AA525853, BF055306, AI038815, AL048329, AA834008, BE391165, AA541782, AI189885, AI707522, AI086832, AI436627, AI304521, AI087181, AA481901, BF725693, AI832585, AW518701, AI749608, AI076047, AI797199, AA437391, AI025561, BG118128, AI301508, AA434030, AI288407, AA534237, AI367324, AI222841,

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HMALJ21	780	1052874	1 - 2012	15 - 2026	AL519388, BG259676, BE277678, AW205482, BE869625, BF316260, AI277584, AW664331, BE622336, AL519387, AW662197, AW136690, W52642, AI250913, AW138798, BF740532, BE677906, AW138820, AW608260, N35182, N24280, BF768395, BE144069, BE905906, AI632485, AI655964, AI350527, AI632508, AA454785, AW088958, AA351397, T79897, AI095945, AI001211, AA116116, BF948656, AI695261, AI453666, AI467878, AI368974,

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HLYAR61	781	105303 7	1 - 769	15 - 783	BE539148, AV701008, AV725116, W46534, BF208088, BF382571, BF239279, AV723526, AA156901, AV655710, AI539186, AI418461, BF590840, AW954196, BE439596, BF571987, AI697932, BF673830, AI685500, AI015531, AA442557, AI949700, BE612620, AV701346, AI690126, AI807479, AA743893, AA427395, AA706606, BE091133, AI334957, AI093104, AA634337, AI247843, BF030479, BF029431, AI150112, AI912124, AI129790, W46170, BE466890, AW300000, AI280605, N32003, AA911924, W37946, AI689978, AA428154, AA628163, BE771950, AI268698, AA970845, T47498, N26101, BE004235, H82110, AW328343, W37884, H97954, BG114369, AI935379, AW014961, T47499, BF333867, AA229994, AA303594, W05782, R24400, H82111, AW361303, AA569753, AA156856, N71934, R53408, N77889, R02637, R24401, AA878435, AW168612, R01695, T34016, N36740, AA026193, AW661659, AA026265, BE394279, AA670493, T24763, AI245496, AA090760, AA029702, AA610033, AI089660, AA994488, AA860434, AW473074, AA769881, AW891864, AI814435, AW891684, AW891868, AW827103, AI560099, BG164558, AI921248, AL513991, AL120853, AI174394, BF816037, AL513999, AI699865, BF965789, AI637584, AL041772, BF970652, AW079159, AI677796, AI824648, AL514701, AL514867, AI627988, BF856017, AL513631, AI926790, AL513597, AI433157, AI702073, BF812961, AL513907, BF856052, BF812938, AL515413, AI611743, AI610690, BF904265, AL514087, AW198090, AW167228, AL513779, AW026882, BF812960, AW148363, AV735485, AW150578, AI564719, AW983691, AL513937, AL514493, AI554218, AL514627, AL513577, AI537303, AI815232, AI889376, AI830263, AL514983, AL514721, BG108324, BF032768, AI633125, BG116387, BE886728, AW827289, AI570884, AI619502, BF970731, AI499285, AI886753, BF885000, AI620284, BE965621, AL513947, AI478123, AI073952, AI783861, AI802542, AL513553, AL045500, AL514025, AL514473, BG114104, AL038445, AL037454, AA287231, AI687362, BE620084, AL119791, AI697304, BE879906, BE011885, BG109221, AI919345, BE910373, AW073865, AW104724, AL513977, BF526020, AI687065, AL514035, AL514879, BG108288, AL514359, AI587114, AI249877, AI590530, AI494343, AV764180, AI288050, BE965121, AI567360, AL513807, BG257611, AV714485, BG180996, AW163464, AL042544, AL036274, AI536685, AW983703, AL036631, BF868489, AW102924, AL514205, AI499191, AI539153, AI311926, BE047852, BG110946, AI249497, AW193530, AW073270, AW057937, AI682971, AI819326, AW148408, AW161579, AI801325, AW235745, AW051258, BE621256, AW021373, AI610671, AL514919, AV753074,

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HLTCQ80	782	1053164	1 - 616	15 - 630	AL529504, AU130820, BE870204, AW594213, AA812811, AI685300, AL041426, AI339360, BE881085, AK001602, AF064801, AK025043, and AF064800.
HDTDU67	783	1053171	1 - 1130	15 - 1144	AI701918, BG254806, AA921832, AW007649, AI620402, AI831129, BE048758, AI985974, AI000597, AI683794, AI669164, AA599078, AU150782, AI290796, BF514603, BF588503, AA604667, AI022848, AU155576, AU156459, AA747513, AU155795, W52775, AI469233,

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HACMU05	785	1053236	1 - 2888	15 - 2902		BF343552, AL530409, BE746094, BE735802, BF062326, BF035716, BF974591, AI860688, AW510818, AW301062, BE617865, BF037490, AW590960, AW024302, AL530410, BG261229, AI866462, AW172916, BE551941, AI768917, BE617409, AW070609, AW593651, AU118967, AW369001, BF759621, AI298317, AW629258, AA827780, AI761873, BE743439, AL121507, BE246022, AW134595, AI336551, BE048247, AI961076, AI214155, AI084078, AA279294, AV737033, AA824473, AA584377, AV739719, AA676851, AI540805, AV744481, AI905879, BE245495, BF315596, AV739119, AW978944, AV743283, AW137331, BE245620,

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HOVDF79	786	1053369	1 - 2312	15 - 2326	AU119377, AI129991, BF109705, AI003504, BF970648, AI978786, AI942472, AI923428, AW157102, AI337325, AW305224, BF439855, AL043698, BE889977, AV708983, AI949346, AA779822, AW662369, AU145736, AU139589, BF336739, AA902404, AW450949, BE552252, BG054963, BE048768, AI183371, AI422983, BF478172, AI085398, AI624398, BF438641, AI743061, BE465292, BF797246, AW182966, AA653306, AA702436, AW408332, BE566450, AU145016, AW166329, AU154587, W73118, AI028580, AI088059, AW002495, AU158347, AI334137, AI432305, AI803106, AW104041, AW304421, AU158692, BE670915, AW238419, BF327057, BE253783, AU147362, AI684123, AA308483, AI034255, AI088358, AI095015, AI146768, AU149082, AI378977, AI718426, AI754081, AI002387, N51414, AI268360, AA810276, AI830449, AI151401, AU150212, AI375778, AI446077, BF115834, AI950139, AA779348, AU153375, W86275, AI088406, AI263017, AI094353, AI140293, AW803630, AU158571, W31856, AW606728, BF433824, AU159526, AI439425, AI745558, AU158090, AI057081, AU153897, AI160952, AW771340, AI248226, AA699336, AI370781, N50861, AI805789, AW080680, BE670404, AA284436, AA234679, AU157446, BF033408, AU150130, AA889342, AU149164, AA490361, AI800855, AI769864, AL043697, BF688126, BE503532, AW444986, AI266732, AW368126, AW368120, BF827396, W73138, AW873365, H82394, AW368023, AW263912, N80171, AU156841, W78224, AI803688, N34343, AA642583, R99060, AA962061, AA807778, AW772055, AA678399, AA225086, C04873, AA679450, AI783666, AI473702, AA628546, BE775239, BG059529, AA811471, AI909121, T34767, AA825759, H08335, BE178051, AA831866, AA768970, AI968631, H17949, AA292712, T08453, T16462, W81516, AA234752, AA225217, R62711, BE177869, AA247183, AI915047, W72185, AA362699, H17164, AW505122, AA709427, AI367965, AI367964, AW193572, R59387, Z38714, BE080939, AU118459, R44755, R99257, AA853740, R52397, AA099272, R99245, AW467886, AA480287, AW088296, T33541, T56948, AA098893, F02426, R63669, W81632, AW089041, R99049, AI933597, AI302303, W86309, AA917412, AA056449, AA301282, AW363137, AA532412, BE926640, T16601, BE844238, AW503719, AW196019, AI434011, BF082587, AI241010, AA978275, AW378894, F06155, BF733750, T35240, H12819, AA093937, AA095746, AL118913, N56371, W70334, AI588883, AA781204, BE708492, W77820, AV702009, BF762691, BE817855, BG058239, BF089716, BF692584, AI889870, F05792, AF315592, D43951, D87078, AF315591, AF315590, and

HVVBJ54	787	105354 7	1 - 2412	15 - 2426	AC007041. AL532654, AL530889, AL534020, AL537526, AL530888, AL525712, AL521657, AL525763, BE793935, AL521656, BE796453, AU119567, BE792417, BE798441, BF725408, BE900395, BE790588, BE793564, BE795941, BF347286, BE799071, AL523403, BF345734, BF346676, BE792463, BE732867, BF797369, BF311686, BG035268, BF346326, BF529548, BE274709, BF129147, BE891949, BF529831, BF966181, BE293960, BE797363, BE908606, BE618435, BF348249, BF966958, BE280000, BF205224, BF220163, AI937018, AI217946, BE392205, BE257725, BE277463, BE276125, BF219775, BE898646, BF306302, AI889778, BE280487, BF338663, BE253082, BF527536, AI978994, BG115271, AL535081, AW027567, BE266931, AW673680, BF674591, BE790632, BE266572, AI879285, AW247302, BE265342, AL037238, BE266085, BE266613, AL036056, AL523404, BE886202, AW088030, AI828025, BG108959, BF531099, BF530034, AW249680, BF105015, BF124927, AW249988, BF529605, AW005767, AW245509, AW674591, BF315475, BE388894, BF346800, BE410333, BF314878, BE018407, AI879042, BE018400, BF348246, BF435973, BF957807, BG231802, AW245215, BE881900, BE737050, BE840198, BF688787, AW593278, AW245544, AA601523, AW263255, AW250569, AI879665, AI762319, AI205160, BE840221, AW245953, AI460339, AI354877, AI659964, BE784938, AI205136, BF526267, AI362863, N73458, AA191613, BE618669, AW662301, AI084870, AA707023, AU128532, N64677, BG106050, AA807665, N80110, AI333146, W29019, AA911087, AI829869, AL529946, AW161842, AA100714, AA814122, AI344503, AW630641, AA565221, D83844, AI298192, BF107350, AI377370, AU145877, AA576276, AI660510, AW246021, AI762020, BF348086, AI566827, BF038893, AA252636, AI557623, AI033568, AI275530, AW247446, AI243160, AW249916, N29820, AA401999, AW630888, AI459872, AW963847, AA614052, AA577310, AI335699, BF725197, AW005523, AA084464, BF436886, BF725374, BE266080, AA879130, AW020106, BF087850, AI016590, AA878132, AI937316, BF087877, AI904603, AA136726, AI092495, AA100767, AA225428, BF935680, BF087592, AA226157, BF931978, BE164779, AI221758, AI245254, AA975022, BE247132, AA669742, AA894694, BF922131, BF815547, AW732058, BF931980, AI380988, AA887378, AA634866, AA281318, AA977242, T08546, W72609, W76675, AA745751, AI800988, AI918129, T54094, BE840169, BF805751, AA659245, BE276130, AL047089, AA378278, AA586773, BF369800, R84952, T07628, W23065, D53077, AW949365, N67206, AA223541, BE840074, AI311661, AI673660, AA604301, BE393727, AA652178, AA506890, AA062781, T35654, BE328448, AA570603, BE840076, AA364044, AI627726, AA278340, AI954256, BF931727, AC004258, D78134, AF021336, AL133636, D78135, AX046362, A75235, AB049848, AB044390, X62773, T51013, T51104, T54185, T68577, T68655, T90261, T90702, T92691, R34639, R49168, R51392, R49168, H28502, R84994, H83786, H84723, H84890, N42512, N92710, N93744, W02861, W20327, W23680, AA031294, AA062736, AA070243, AA070244, AA136684, AA223589, AA225393, AA225735, AA259177,

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HOFMU50	788	1053548	1 - 533	15 - 547	AU132452, AW291760, AI216391, AI525969, BF947708, BF337266, AK023260, AF267982, AF288992, AL121989, E17301, AB024568, AB007917, AF060178, AF169243, E17300, and D88811.
HE9MO38	789	1053585	1 - 875	15 - 889	AA493380, AA334302, AW951691, AA313463, AA313497, BE902087, AA612692, AA321064, AW955000, BE742712, AW006877, AA299564, AI215629, BE811297, BE869635, AW242221, AI268131, BG025716, AI525357, BE875568, BE783028, BE537297, Y11484, AL136295, and X92720.
HOPJF55	790	1053725	1 - 1158	15 - 1172	AL523613, AI583204, BG120734, BE614443, AI992172, BE886511, AI889239, AI075175, AW054762, AW471391, AI565737, AW519090, BE042738, BF732572, AI694195, AI394109, AA609929, AW167797, N30174, AI675145, AI333284, BE348940, AI348209, AW338504, AI262299, BE221339, AI140136, BE613836, AI190472, AW243822, AI142033, AA582569, AA464838, AI341876, AI357231, AA620776, AI333443, AI741278, AA865411, AA451663, AI677747, AI499958, AI292324, BF435957, W52760, AI751760, AI564037, AW297338, AI291569, AW170704, AI354944, AI498724, AI262436, AA620793, W52026, AW205638, AI247750, AW593472, AA777068, AA317293, AA582741, W03413, N46148, AA568649, AA722460, W78008, AI240599, AA923449, AA601169, BE150238, W87000, AW779522, BE812439, AA379596, AW263292, BE062962, AA379287, AA450251, AA341820, N40820, AA738207, AA853444, AW262564, H27217, C02525, AA922610, AI371985, AA359221, AW296820, AA853445, N36877, AA911932, BE693985, AW603029, AW950060, N67487, AA330786, AA581766, AA247429, AW605997, AA720994, R21859, AA341470, AW605998, R21862, AI701773, AI264461, R67787, AA992864, AI129067, W79893, AW198060, AI567586, AA857927, AI280922, R67788, N86551, AI916486, AA055177, AW580765, AI129037, BF062386, AA513284, AI149517, BE062965, AA450309, AA329559, AI971437, AI250656, AA296724, T12333, AI687174, AA091735, BF589785, AA092748, AI990853, BE077064, AA582377, AW243840, BF330684, H26201, AW603138, AX014087, U19718, AL049569, S68064, M59851, L23769, AJ009948, U19719, and AA055295.

HAOTD13	791	1053746	1 - 994	15 - 1008

BE799225, BE618864, BE799188, AI190314, BE902052, BE732626, BF338390, BE740450, AI148878, BE741535, BF690392, BE748721, AI081232, BE746546, BE314406, BE902235, BF316712, BE794590, AI204081, BE790602, BF975103, BE730656, BE745737, BF308298, BF969904, BF689453, AI983729, BE548414, BE618379, AA781462, BF315257, BF976258, BE745233, BG024416, BE902752, BE788069, BE255282, BE907398, AI079576, BE302855, BG118897, BE891433, BG258174, BG179007, BE255307, BE258767, AA778554, AV759912, BE540548, BE908456, AW026432, AW157348, BE748048, BG114783, AI820053, AW163407, BF975156, BE733757, BE903629, AW026229, BE905435, AI553851, AI857561, AI81796, BE733863, AI032535, BE855855, BE892753, BF797147, AA724133, BE855433, AW083250, AA412706, AA292189, BF789865, AA576423, BE535652, AA075512, BE019659, BE251323, BE019712, AI129134, AA075511, AI609823, AA551928, AA291788, AA399084, AA864673, AA399692, AA593943, AA397672, AA723613, W28583, AA310012, AI285038, AA405095, AI866592, AA774638, N22852, AW794779, AV742027, AI149026, AV717158, AA164510, AW089756, AW794764, AA886985, AL537527, AI291219, AI961557, W70096, AI015724, AA082829, AI041153, AI140036, AA725759, AA729842, R62749, AI568491, AW391249, AA287512, N58787, AW794782, AA101085, AV741366, AI290054, AI050996, AW794936, BF941032, AI692317, AW794876, BF125011, H99328, AW006955, BE300531, AI092733, W28780, BF210376, AW337357, F36786, AA076255, AI568190, AI929499, AA588108, AI929541, N91155, AW197007, AA994790, BF081605, AA971112, N35606, BF361421, AV738471, H95064, AA508023, AA287384, BE073579, BG056567, BF676892, R69908, BF674295, AI203456, AW381952, H61382, BG230794, AA477996, H48682, AW580580, AA287849, BF246820, AA481906, R23865, AW439138, AI350298, T95464, H81575, N26433, AA715821, AA367130, H70334, H94465, BF527562, AA310900, AA076254, H83767, AA917813, AA335277, AV735711, H62402, AA480101, AA747596, AI801317, AA340716, H94798, AI749929, T69061, T68984, AI953164, H61381, H48513, AW386817, AW250564, AA325135, AA336042, H93989, H83908, H96377, R78775, F19155, AA477997, BF687682, F31851, R33912, H03483, AV744024, AI458674, R92549, W16564, BF746771, BF821358, H03578, H62403, T99495, R48630, R79081, H20726, AI720532, T98906, H94558, F19427, BF738012, T19150, H98962, AW338431, BF820551, AI695819, AA317280, R22084, AI688669, H70335, R69863, BF331545, BF821444, AA304515, BF903687, R33024, N77476, AA345986, AA877573, AI871273, AX014335, X16312, M30448, AL132713, AP000504, X57152, AF129756, L15619, X52959, X56502, M98450, S56242, X56503, X80685, AF109719, AF133088, AX047063, A82595, A62298, AX047064, A62300, AR050070, A82593, AX047062, Z30183, U94592, AX009343, AX009341, AX009337, AX009335, AX009345, AX009342, AX009344, AX009340, AX009339, AX009336, AX009338, AX009334, AX040581, T95360, R22031, H00821, R92456, H93990, H94701, H94703, H96376, N71296, W01604, AA164509, AA236016, AA588428, N83194, and D20309.

HODCJ32	792	105377 2	1 - 843	15 - 857	N98689, BE220444, AW014160, AI684332, AA908217, AI768199, AI420127, BE328071, AA256404, BF439620, AI268854, AI818740, AI859930, AA988651, AI240108, AI457355, AW193469, W88508, AI298653, AA705838, W90399, N66164, N64630, AA256298, AI123104, R51117, AA410637, AI565699, BE830775, AI090999, AI333934, AA321997, AI419686, N79959, AA019567, AC006160, and AB033102.
HOCPT34	793	105397 3	1 - 2343	15 - 2357	AL516637, AL536090, AU131623, AU128040, BE871627, BE887564, AI559471, BE782375, BF197393, AW300290, BF725147, AW580224, BE177290, AV726266, BG107708, AL533304, BF724858, AW771057, AU126185, BE294538, BE295415, AI033487, AL045011, AL045003, BE872512, BE350471, BE148091, AW303509, AW001892, AW962800, BF925269, BE967600, AI271904, AI863524, AA579942, BE969850, AI554943, BF951650, AV701826, BF951644, AA505945, AI424740, AA188625, BF947724, W87888, AA021522, M62015, AA451951, AV649739, AA179502, BG108051, Z43171, BE379997, AA179481, AW960727, F06685, W87815, BE934233, R74509, W20274, AW663636, AI394602, AI815234, F09307, AI263828, AA325948, BE328111, AW996063, BE503163, H24294, AW341860, AI698362, BF902323, BF889196, AI002877, T87325, AA355638, BE540171, AW379824, W21832, AW992687, F05888, BE090298, T87427, BF382925, BE095176, AI474826, AA188757, AA371304, Z42486, BE699743, BE170074, BF726249, AW510526, AA932578, BE552427, R89855, AW166687, BG178825, BF951590, BF726418, W86993, BF850658, W92023, BF842138, BE700038, BF088114, BF741571, BE958636, X81889, AC005042, U81005, D17102, and AL050364.
HFKHC64	794	105401 5	1 - 1962	15 - 1976	AL520088, AL522023, AI669758, AL520087, BF313617, BE796161, BE867541, BF969868, BE870134, BE871582, AL040779, AW007648, AU133627, AU122531, BE795892, AU118141, BE617475, BF032557, AI813416, BF984498, AI922790, BE877667, BF981072, AI818627, AI683114, BE280176, BF593818, BE262646, BE873710, BF438287, BF313170, BE867308, BF880640, AW239514, AI859453, AI805461, BF312324, BF312686, AI817269, BE798516, BE262187, AL040778, BE670555, AI589223, AI859447, BF102546, AI827343, AI088366, AI038184, AW080985, AW029180, BE313320, BF881541, AA523906, AU124748, AA404715, AA757162, AA533530, BF984274, AU126959, AI751655, W86506, BE313538, BE536712, BE873642, AI366123, AA838403, AI583599, BE796350, BE502187, BE902265, AI636646, BF915019, AA668508, AI752316, AI079121, AI752315, AW137769, W59993, BF310591, BF762496, AI677762, R59727, AI751656, AA884168, AI039262, AA729713, AA112575, BE872221, BE879109, BF317243, AA112576, R73625, AA992193, AA225005, AA128885, R73697, AA076108, T52678, AI205653, T52677, BF765650, W52739, AA159180, AI084546, AA181476, R59836, AI806402, AA159258, BF740972, AA514833, BF841749, AW178873, AU076542, AW386949, AA133108, AW953790, AW351518, AW178870, AA404588, BF880633, AA364017, AW845180, AW386948, AI818328, AW386951, AW845174, AA225050, AA182944, AI652074, C00163, AA888456, AA888545, W86439, W69936,

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HOPKO37	795	105408 5	1 - 2104	15 - 2118	AL515664, AL524779, AL518207, BE797393, AL525979, BG119182, BF338628, AI978592, AW236571, AI950954, BE799316, AA976746, AI367649, BF737171, AU151637, AU151942, AW950551, AL522243, AL522244, AW291293, BF527370, AA100964, AI637966, BE906449, BF515686, AI973165, BE328566, AU150007, AI985899, BE350709, AW955183, AA903534, AL534285, N69879, AI683844, AI539699, AI862965, AA722542, AA157234, BF569979, BF928083, BF081481, AI937048, R21933, AA921357, AW263068, AW078559, R15254, BG056697, AA853109, AI921712, AA501571, AA491761, T28437, AI417310, AA974219, BF514105, AA644634, D55622, T08014, AA173338, AW239549, AI675176, AI904931, BF529133, AW887766, BF924338, BE774190, M85424, AA484169, BF854146, BF960484, BF960491, H39733, BF850364, AI363763, BF310916, R85867, AA027031, AI479546, BF081518, BE163371, AI435672, R22582, BF930534, BF849651, BE544234, AA324089, BE073147, AW949191, BF756750, BE834207, AF187148, AF187147, X59267, U00802, AL110225, D17530, and AB015042.
HNBVO53	796	105412 2	1 - 2424	15 - 2438	AU123514, BE797781, BF530408, BG110499, BG030912, BE253026, BF526281, AI655767, BG250155, BF063129, BE621171, BF348182, BE621844, AA532783, AU152557, AA936772, AW628190, BG107424, AW136709, BF344327, AU154567, AI569240, AI927300, AU152096, AU144363, BF313185, AA845914, BF476524, BE220478, AI685706, AA534332, BE779247, AW071965, AI970850, AA836622, AA121331, AA196265, N62385, AI023383, AA835031, AA309005, AI380911, AA837870, BF037753, BF929041, AI628778, BF897676, AW167088, AI635967, BE260887, AW026752, AA996092, AW591385, AA298626, AI446440, BE252176, BF815841, AA121494, AI872757, BF920701, AW948496, BF992448, AI671996, BE782229, AI359525, BE815916, N44199, BF328458, AI637865, T50194, T50139, BE314147, BF475277, AU133189, AI672561, AW880161, BF312475, BF815631, BF528463, AW364326, AW603816, BF897680, AI446734, BE730847, AL537364, BE263444, AR077146, U88153, AR077147, U88154, X75330, AL139383, AF177767, AK000250, U95739, AL022723, AF307337, AL078630, AC006944, AC010723, U72620, AC025735, AC006338, AC010088, AL353999, AC002287, AL050322, AL020995, and AW003538.
HOPKF84	797	105415 5	1 - 2008	15 - 2022	AV758100, BF980114, BF574278, BF970145, AV758858, AA628397, BF791399, AA628438, BF791467, AI743743, AA741499, AI767389, AI967956, BE380111, AV714052, AW103967, BE865483, BF208989, BE672325, AA768854, BG058541, BE564796, AV715992, AI677784, AA015599, AI765361, AW181895, BG170527, BF217259, AI811418, AA889584, AI934936, AW188257, BG109088, AI627968, AI435166, AW015219, BF217253, AI186649, BE672387, AI090415, AW967749, AI689149, BE672811, BF028345, AW301148, BF242906, BF477633, AI000120, BG112549, AA748367, AA465112, BG109521, BF894170, H81836, AA804217, AI891100, D79280, AA099034, AW016554, AA805297, AA970066, AI536041, D62658,

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HCQDQ11	798	1054196	1 - 799	15 - 813	AL538129, AL525022, AI111183, BE896548, BE872112, AI174851, BE875361, BE877234, AV729201, BE880128, BE875412, BE879304, BE881218, AI133323, AI133348, BE877386, BE877647, BE881076, AV726346, AL513828, AI114736, BE879909, BE878894, AV728251, BE874647, BE878122, BE876531, AV706779, BE874520, AV705883, BE875889, BE879135, BE876719, BE881222, AV729465, BE876043, BE877496, BE898937, BE891387, BE879695, BE876425, BE877004, BE867307, BE878178, BE874747, BE870155, BE875792, BE878626, BE880711, BE877131, AV729314, BE877150, BE875858, BE877497, BE880762, BE874662, AI750078, AV706307, BE877757, AV725309, BE876651, BE877268, BE877390, BE873343, AV693283, AV705995, AV724988, BE892487, BE880690, BE873478, BE874696, AV725316, BE873954, BE879455, BE876550, BE876704, BE874926, BE879522, BE880948, BE877488, BE898560, AV702923, AI065146, BE898750, BE879410, BE874003, BE891700, BE878210, BE868527, BE881146, AL048390, BE879895, BE874445, AI110700, BE878213, BE868548, BE876098, AI147501, BE880602, BE875601, BE869133, AI749163, AV710316, BE879775, BE879302, BE870577, AI114553, BE874422, BE869149, AL036120, BE876785, AI133444, BE868532, BE899424, BE898986, AV726351, BE877242, BE897096, BE878330, AV709557, AV721544, BE897811, AV726493, AV760899, BE880425, BE880237, BE879859, BE878477, BE876062, BE867317, BE878677, BE875261, BE877643, BE896982, BE880140, BE880722, AI133486, BE868603, BE896992, BE875918, BE878900, BE875968, BE878422, AV708006, BE879413, BE895621, BE879761, AV706033, AV714977, BE875062, BE875955, BE877726, BE881506, BE880958, BE876884, BE877598, AV723290, BE543600, AI114723, AI174902, BE880977, BE881693, AV702580, BE877674, BE875438, BE873842, BE880947, BE874215, BE874402, BE876037, AV709615, BE875168, BG179400, BE878468, AV723029, BE894635, AA639334, BE880688, AI114569, AV705696, BE879688, AV723395, AV707010, AV659215, AV721627, AI721239, BE878238, AV702695, BE880276, BE877542, BE868786, AI110881, AI110734, BE878173, BE875310, BE873841, BE881638, BE881057, AV721920, AV708355, BE876568, AV725190, AI833114, AV722162, BE880950, AI114585, AV721831, BE898371, AV708529, AW583569, BE877813, BE877271, BE880442, AV723161, AV706277, AV759353, BE875398, AV722611, BE878381, AI720161, AI207615, BE895091, AV706568, BE880705, AV702323, BE877616, BE878333, BE877479, AV721391, AI133691, AI133302, BE875536, BE874084, BE881594, AI110877, AV700257, AI733732, BE880427, BE894655, BE877518, BE875382, BE881138, AV726110, BE881444, BE894924, AV721794, AV706979, AV727742, BE880157, AV648404, AR083056, I27367, X54629, AX039612, X62996, V00662, X93334, D38112, L08441, D38116, X93335, D38113, AL359334, X93347, D38114, X97707, AF134583,

					U35430, Y10129, X84075, AX026544, AF004341, AF144745, AB005535, Z79403, Z79419, and Z79459.
HTFML39	799	1054230	1 - 1117	15 - 1131	AL521566, AU132947, BE796018, BF315869, BF529521, BF342405, BG110483, BE728134, BF343720, BE730825, BE748876, BE548415, BE274864, BF339798, BF304364, BE732386, BF315441, BE786312, BF182790, BF968636, BE563888, BF038254, BG255203, BG110675, BF035338, BG119773, BG119580, BG113551, BG104944, BF793179, BE789501, BE905838, BG253457, BF206217, BG169125, BE258630, BE905033, BE878321, BG117367, BE902660, BF340314, BE788244, BE898712, BG105366, BF313550, BG249903, BE899138, BE909568, BG026799, BE621592, BG179337, BE906113, BG115754, AV721524, BE893911, BE782221, BG035773, BG028967, BE904789, BE868117, BF183186, BE728460, BG028089, BE383131, BG165408, BE385011, BG169445, BG104995, BE255596, BG115817, BF310299, BF691775, BE875197, BE877408, BE386706, BF309091, BF964982, BF669408, BE880221, BF344914, BF971354, BF315104, BE314030, BE293308, BF697543, BE256255, BF679612, BE263605, BF673819, BE277661, BG110524, BE960835, BE873914, BE313764, BF668331, BE264281, BF793965, BF665289, BG117924, AW518666, AV701703, BF793392, BE547745, BE735901, AA126478, BF982353, AV708851, BF576741, AU154376, AI140261, BG259878, BF668401, AA933701, BG164948, AA311048, AA903801, AW069876, AW950229, N25666, BF677004, AI749940, BE313988, BF968021, AA844255, BE260225, AA923066, AI190054, AW516719, BF678818, BE905919, AI189989, AA683180, AA868208, AI200522, BF700293, AI151195, BF248227, AV748753, AA618277, AV704674, BE256823, AI003622, AA928475, AI698515, AI819243, AI636813, AI873651, AV748748, AI075108, BE905993, BE786788, AI264463, AI720873, AA405732, BF312219, AA617719, AW276899, BE748286, AV752868, AV724041, H96665, AI369903, BF971263, AI984852, H37980, AA976043, AI368683, AA676347, AV763783, AA632591, AA729917, AA041378, H39510, N78663, AI185253, W07016, N95711, H38201, AW169761, AW243746, AA195473, AI874282, AI860540, AW406435, AI077646, H22238, AI281822, BG170377, AI799707, D53319, BG168389, AA152179, AA618235, N79560, W20111, H70130, R33096, BF680267, AI547083, T59878, BE907521, AI524586, H70141, H70129, W59941, H67874, AA557768, AA337055, AI027038, AI288096, AA397637, AV750982, BF525883, BF477830, AI911809, W44943, AI205865, AA404266, AI244252, BF678473, W24865, N20095, AA935411, AI186009, N22863, AI001215, H15847, AA371710, AA864565, R83778, AW079732, W46569, W46988, H70142, AA460292, AA902854, AA565961, AV695742, AI524956, BE251888, AI000752, BE408617, BF927587, AI658831, R83344, AA902531, BF917194, AA481464, AW072107, R73752, M63573, M60857, M60457, U95646, D14073, X58990, M60456, AF071225, M63553, AX024013, D28465, T59969, R33189, R70193, R80575, R82525, H16158, H25156, H25499, H30503, H64624, H82596, H96541, N20397, N25489, N31525, N39292, N42464, N71262, N71712, N75425, N80056, W25031, W39593, N90698, AA088511, AA088510, AA190403, AA190547,

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HOGCR32	800	105423 5	1 - 195	15 - 209	D86958, and AB050017.
HFCDL60	801	105428 8	1 - 1145	15 - 1159	BE735923, AI797287, BG115092, BF984368, AV734956, BE782551, AW963436, BE734764, BF741486, AI417037, BE047487, AU139797, AW614852, BE206393, BE645429, AI570957, BE278325, AV685296, BG059639, AW085167, AI342088, AI091080, AI670117, BF317212, AI375955, BE727563, AA406138, AI674218, BF527302, BE260465, AI307214, AI039708, AI278555, AI308199, AI804252, BE397161, BE267961, AI143247, BE271284, AA179217, BE312935, BE857958, T60490, BE559957, AA179218, BF953246, BG248792, AA479955, BE396639, AW139810, AW800289, BE276441, BE312359, BF527732, AI290336, BF376689, BE409355, AA968854, BF819153, H81763, AW888756, AA297277, BE729397, AW800327, BE546083, AW888764, BE781522, H44302, BF312468, AA302994, T66192, R49957, N50982, F12041, BE904711, AI990689, AI990013, BF926592, AA825494, AI656978, AW025641, R59453, AA478857, AI633898, AI381847, AA234882, AW963831, AV761704, AW205263, BE397225, AA018203, BE390473, AA235309, AA298718, R50303, AA853469, BF792351, BE390003, BE561075, R50304, AA341701, BE830781, BF759397, BE296667, Z40331, AI123938, AA810959, BE908294, AI906347, AI906396, BE274582, BF028602, R47809, AA297899, AA477659, BE543777, BG122377, BE241908, BE311529, AA302955, BF767415, BF034042, BE269825, H81762, AA310733, BE276171, AW403784, AA297784, BE384715, BE968774, AA227218, AA730880, AA948131, BF819152, AI436806, AA171826, AW629605, BE409949, AA298947, AR077724, AF005038, AF295402, and AF295405.
HODEC13	802	105440 0	1 - 1587	15 - 1601	AL529027, BG032710, BF340863, AW298183, AW071103, BE280319, BE733423, AI597705, BF990521, BE295339, BE465216, BF990508, BF591357, BF990509, AA412658, W94248, AW139770, AA233003, BF305673, AI972011, AA926846, BE501013, F08452, BF205806, AI192772, AI215515, AI138422, AI360421, H85735, R19924, W67467, AI073920, AA359416, BF195137, BG250773, BE410047, BE703239, BG253012, AI971074, BF767322, AA360108, BE266899, R71864, AA628097, AA405160, AI870873, AA707220, BE799986, AI417320, AI990992, AI422884, BF061608, AI223130, W67468, AA422049, BE856683, BF063050, BE707658, AL390184, AC007059, AC006128, AB012265, and AB012266.
HUSYA18	803	105445 1	1 - 676	15 - 690	AI630915, BE315220, AI686944, AI817246, AW162565, BE748690, AA621824, AA613885, AA243477, AI148140, AA599322, BE748790, AA483552, AI096489, AA176242, BF437716, AW818628, AW818575, AA588407, AI862878, N95605, AA427425, AA412220, AW673918, AL527492, AI573043, AA470032, AA677651, AA577431, AA902530, AI434640, AI613297,

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HOCON42	804	1054527	1 - 2437	15 - 2451	AL519517, AL526142, AL534164, BE885756, BE621304, BG249081, BF313448, AW361554, BE886300, BE278345, AV704016, AV704423, BF798209, AW007684, BE792915, AA527297, AW374214, BE538768, BF337215, BE277949, BE294274, BG254330, AW207562, BF002700, AW578195, AI738569, BG169510, AW007693, AI553858, AI760425, AI669766, AI739483, BF808018, BE889821, BE782039, BE293113, BF125432, AI743185, BF154721, BF530774, BF808020, BF929315, AW851394, AW054902, AW207156, AW003601, AW361575,

					AI991291, AI049691, BF802491, AA223131, BF084670, BF750810, BF475801, AW103033, AU153483, BF927820, AW850936, BG118548, BF747951, BF814169, BF092988, AI310442, BF092995, BF092992, AI923807, BF809250, BF092962, BF093001, AI493604, BF591238, BF092993, AI499081, BF092997, BF092961, BF092994, BE934428, AI285965, BE934419, BF093229, BF892634, BF092975, BF092989, BF093211, BF093216, BF089329, BE934331, BE940289, BF093234, BF093000, BF093215, BF092972, BF089310, BE934460, BF092985, BF093222, BF092980, BF093221, BF093026, BF089321, BF093066, BF093218, BG033313, BF092977, BF092998, BE934480, AW135840, BF093230, BF092965, BF093225, AI369074, BF093224, BF092946, AW299929, AW651681, BF093089, BF093209, BF092990, BF093077, AW439515, BF093208, BF377524, BF747983, BF946471, BF093241, BF357108, AW136328, BF093210, BF377521, BE891425, BF765598, BF089204, BF093231, BF092939, AW579099, BF107443, BF377520, BF093107, BF093104, BF759372, BF093002, BE872574, BF827769, BE296190, AI351078, BF763271, AL135161, BF929296, BG010241, BF881021, AW845179, BF093022, AW895040, BF734196, BF092971, AI950167, BE174096, AU131810, BE903495, AW518521, AL046728, BG248622, AI245500, BE843839, AW580422, BE934328, AI057264, AW292493, BE730115, AI905742, BE077287, BE938501, AI654523, AI744139, AW195303, AW845183, AI631145, BF757539, BE672425, AA887978, AW087772, BE938484, AA678580, BE902690, BF925750, BF089203, BF931279, W45487, AA780897, AI758551, BF093097, BF800895, AW008009, BF757535, AW006821, BF436459, AI817321, AW862169, BF092967, BF092978, BF377511, AW881491, BE463552, L36983, AC007229, AK023207, L25605; L31398, L24562, L31396, L31397, L31395, AC011554, and AI825013.
HKMNH37	805	1054550	1 - 1937	15 - 1951	BE794712, BF056090, BG032645, AW963359, AI609324, AI797094, AU141720, BE220504, N62821, AW384434, BE391552, AI745653, AI859678, AI242676, BE869868, BG231791, AW513142, AI276266, BE018033, AI190261, N32701, AU159211, AA487433, N22994, T19397, AA574187, AA515072, AA478927, AI867978, H69438, BF903409, AI631179, AA513388, BE182286, AI004755, AW044147, H54167, AI223797, AI745295, AA657750, AA687711, AI379463, D45484, AA342547, BE673591, BE749133, AA913123, W04381, W01356, AA478809, H69850, AA769538, F34761, BE749132, N74281, AA487641, AA430663, AA461437, H54010, R72030, BE409746, BE670301, BE383720, AI625849, AA461609, F20574, F20605, BE501211, BF903844, BE390109, AW512405, BE391291, BF988687, BF998811, H83563, AW131875, AA815068, AA456482, AA436517, N40421, AW103017, BF447897, BE002531, BE276832, AA377687, BE670898, AK023923, AL390142, and AF131763.
HPDWP21	806	1054662	1 - 1301	15 - 1315	BF339802, AI246593, AI310122, AI830255, BG032489, AI859560, AI817151, BE746733, AI635257, BG120662, BF304489, BF690278, AI690868, AI863434, BF307587, BG167336, AI478877, AW962457, AW370524, AI912854, AI571578, BF836273, AI597983, BE868784, AI587206, BE295076, AA745041, AI828784, BF836265, BE299440, BF344501, AI687042,

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HOGCS52	807	1054677	1 - 2631	15 - 2645	AL530487, BE745421, BF530206, BE744240, BE732555, BE560832, BE728102, BE734494, BE900928, BF340173, BE899085, BG171027, BE407847, BF339012, BE391461, BE005931, BE387398, AW962475, BE392364, BF345275, BE870859, BE269190, BE280532, AA521235, AI569503, BE392132, AL530895, BE908923, BE295971, AW262804, AI264216, BE018918, BE890434, BE005979, BF961405, BF343159, BE715414, BE542338, BF792605, BE514659, AI636351, AI859499, BE675736, AI744758, AA758222, AW024550, AI126826, BF124910, AA594600, BF530317, AI567104, AI935268, AW510761, AI280100, BG149675, BG231713, AI363344, AA483476, BE245842, BE782378, BF896674, N72581, AI633705, AW082737, BF348228, AI291530, AI376854, AA862073, AA523423, AI439117, AA774640, AW360876, AA631579, BG006132, AI459751, BE504207, AW300087, AI673280, AI885032, AA405342, AA788862, BE218474, AI022088, BF896671, AA703032, AW341140, AW026262, AI168484, BE208332, BF376297, AA733166, AW574867, AA878000, AI693928, AA456364, AI377769,

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HWMCK60	808	105475 1	1 - 837	15 - 851	BG034955, BE791091, BF795645, BE887479, AW964050, AI279571, AV703979, AW327547, AW008771, BE858295, AA156871, AV715974, AW327590, AA442355, N32013, AA156980, AI830613, AI589143, AA628965, AA437277, AI572652, AA447436, AI479083, AI582264, AA243570, AA557131, AA706690, AA621068, AA929050, AA446337, AA918355, AI189310, AL537813, BE784139, AI626008, AI401393, BE785013, AI400442, AV723491, BF967964, AA622742, N63418, H99028, C14412, AA243788, AW088157, AA039774, W46195, AA662472, AI277813, AI376345, AA394118, AA641535, AI128499, AI139325, AI251864, AA291896, BF967240, W46369, AV721205, BF514356, AI095636, AI097294, AA664607, AI224485, AI311820, AW591064, AL537812, AA563972, AI079459, AV725856, AI160569, C14369, AI160567, AA991440, AI300798, AI277891, AA283625, AA156771, AA447435, AI091021, AI159880, AI274254, C14400, AA055193, N39264, BF089195, AI350268, W87307, AI091132, N62211, AI362660, BE934325, AW296986, W93925, W81271, AA954225, C14352, N33931, AI378407, AI278572, AV764395, AA936816, W81215, C14220, C14335, AA687810, AA459765, C14509, AA887292, AI205800, AA402938, AI870692, AI334251, AW298025, AW025906, W81234, BF337003, AA804951, AA729670, AI286284, AW264158, AI277887, AV720595, AA719806, AI276858, F23436, AW004643, AI423797, AI242916, D80204, AW955482, AA736608, AA307414, BF091300, AA329436, AW593341, R26078, AI635237, AA156665, AI610660, AI378637, BG058731, R80542, H00546, AI718621, R77959, BE218024, AA354411, AA932784, R62807, D56162, AA356901, AA305255, AV743458,

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HWLOU33	809	1054790	1 - 1944	15 - 1958	AL037051, AL040992, AL042909, AL039109, AL045353, AL039423, AL039128, AL045337, AL039386, AL038531, AL044407, AL038025, AL045341, AL037726, AL036973, AW235098, AL038837, AL039659, AL039074, AL039625, AL039108, AL039648, AL039678, AL039629, AL037615, AL037639, AL039410, AL039538, AL036238, AL036196, AL039564, AL036767, AL039566, AL036765, AL044530, AI142134, AL038983, AL039509, AL037727, AL079878, AL039156, AL037436, AL037295, AL037435, AL037027, AL037335, AL049018, AL040576, AL037443, AL037343, AL036167, AL038532, AL037323, AL040370, AL040529, AL037601, AL037049, AL036117, AL040052, AL044186, AL038822, AL041159, AL038838, AL039338, AL043814, AL043923, AL037742, AL039076, AL043845, AL040617, AL043868, AL041577, AL041459, AL044064, AL040294, AL041635, AL044037, AL042135, AL046994, AL040768, AL046850, AL045753, AL041752, AL045684, AL040625, AL041133, AL043570, AL043848, AL041374, AL043627, AL041523, AL041730, AL044074, AL041602, AL043492, AL040839, AL040510, AL043441, AL045671, AL046442, AL036158, AL039316, AL036132, AL046392, AL043677, AL043467, AL044258, AL040444, AL044272, AL040148, AL045920, AL044187, AL040458, AL046914, AL041238, AL045990, AL047170, AL040332, AL041142, AL044199, AL047219, AL044274, AL040745, AL040463, AL047064, AL040128, AL042096, AL040472, AL039077, AL040342, AL041168, AL040322, AL041186, AL039432, AL040119, AL044201, AL040285, AL040571, AL046327, AL044165, AL040091, AL045817, AL041131, AL040090, AL047012, AL047057, AL041292, AL041051, AL040168, AL041346, AL037341, AL041955, AL040414, AL043775, AL041096, AL039744, AL046330, AL041197, AL045989, AL047036, AL037177, AL040553, AL040253, AL040155, AL040082, AL039360, AL045857, AL040329, AL041358, AL043538, AL041163, AL041324, AL036725, AL041098, AL041277, AL040263, AL043941, AI906064, AI634028, AL041278, AL040255, AL038043, AI906040, AL040621, AL040149, AL040464, AL041227, AI905981, AL037021, AL039150, AL040075, AL037600, AL037047, AL037643, AL039924, AL049069, AL045725, AL039915, AL041140, AL043612, AL036139, AL044162, AL036163, AL036964, AL043496, AL043537, AL036207, AL039643, AL041296, AL040193, AL037054, AL036133, AL041086, AL040238, AL037085, AV742695, AL038821, AL046147, AL038761, AL036970, AL041233, AL036679, AL134524, AL036152, AL041246, AL036924, AV738934, AV718844, AV743601, AV737584, AL045794, AV746102, BF294063, T24119, AV758878, AL039085, AL080031, AW063294, T24112, AL079852, AV701012, AL037569, AV742580, AV717989, AV717980, AV701782, AV718018, AV717988, AW013814, AV731085, E13740, AX035980, I13349, A10361, A91965, A22413, I19517, A76773, AR096545, A35536, A35537, A92636, A02135, A02136, A04663, A04664,

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HAMGH34	812	105501 2	1 - 1694	15 - 1708	BE613557, BE410666, BE254541, AA788928, W73824, AI203994, AA827774, AI657035, AA398840, AI240982, AA435849, AA280540, AA588587, AI912272, W73856, AI261800, AA767870, AA476510, AI826017, AA428181, AI203623, AA188185, BG015927, BF962882, AA722432, AA875844, BF508386, AA188792, BG015917, AI567261, AW071511, AI095574, AA417328, AI660749, AA428392, AA627483, BE836581, BF056887, AW024787, AA417307, AI014719, AA557824, AA280168, AI381202, BE080381, AA932183, AW978501, BF740071, AI419293, AI924859, AA830705, F02450, AW956401, BE966456, AI678158, AI055887, N95415, AI092293, AI807035, AI989916, AI361166, BE042916, AA729234, AI140771, AW089633, BE671414, N52346, AA189174, AA249783, BE836577, C00838, BF961655, T30673, AW960715, Z42973, AI000046, BF954203, AF106682, AL353748, AF317228, U48972, Z82211, Y09858, and AL022157.
HTEHP29	813	105517 4	1 - 875	15 - 889	BG110560, AI631281, AI625779, AA195347, AA195272, AW474711, AI265934, AI138775, AW016790, BG116032, AA884056, BE378635, AW594221, AW117655, AA813932, BE501702, BF970724, AA523692, AI612804, W15522, AI269236, AI688937, BE048861, AW269485, AW269486, AW269484, AI004948, AI038706, AI889700, AI470952, AA812584, AI160543, AI285978, BF221831, AW771552, AA557400, BE502099, AW516672, N23668, AI888851, N22625, AA700480, AI204356, AI381560, AA161383, AW439318, AW299589, BG236353, AA700153, AW273361, AW303803, N59616, AW769118, AA007426, AW243227, AI302000, AI189245, AA195140, H63951, AI480339, AA404683, AA044991, AA515881, AI073466, AI825630, AW271843, AI971564, AA195346, BE090990, AI699944, AI033808, AI873005, AW263931, AA634226, AW337201, R91419, T98768, T97607, AV647493, W15411, AA579985, AW341132, AW970838, BE540541, BE169724, BE673623, BE163714, BF849453, AA732611, BF326748, AA348483, AU125299, N67124, BE178033, BE169478, D20935, AI554244, BE842937, AI824259, AA156037, AA156188, R29401, AW370209,

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HNOJJ32	814	1055248	1 - 2409	15 - 2423	AL534390, AU119754, AL534391, BG166638, BF435674, BG167871, AI796967, BF795015, BE644847, BF681391, BF448215, BF435801, AW195747, AI142105, AU148848, BF431958, BF590714, AU146016, AV707400, BF850758, AI740869, AA191594, BF943026, AI498701, N64011, AI948435, AA191083, AI125704, W86389, W86388, BE047729, BE047722, AW673294, BG055851, AI282275, AA887501, D61002, AI197956, H80459, BF095155, AA330746, AW204689, AI003139, AA219621, AL046187, AI985257, BE889906, H99275, H81379, AA346169, BE140220, H05031, AL046188, R20553, AI912734, T30719, R41899, BF062269, AI197904, BF377757, AU133106, AU154500, BF349751, BF736129, AW386705, AA779217, T24891, BF380122, AW960899, H05030, AI864073, AW841797, AW895025, AA992514, C00222, BF090602, R17531, AA338366, R12654, BE903088, AW020592, AW963756, AW945168, AW950267, AI568293, AV750565, AI525653, AW020397, AI541321, AI263584, AI499570, AV660096, BG253033, AW023884, AW020634, AW949477, AV702794, AW955902, AW954384, AW023863, AW952414, AW021178, AW963879, AW961253, AW965840, AW963028, AW950220, AV688667, AW022826, AW963490, AW958647, AV654896, AW953930, AV685966, AV709869, AW963915, AV690007, AW953657, AV728806, AI538564, AW950223, AW954031, AW949453, AW952439, AV727990, AW950247, AV722222, AV702932, AV702026, AV705341, AV707024, AV701620, AV707296, AV707767, AV704182, AV697638, AV729462, AV703472, AW019988, AI522052, AW023351, AW020931, AW020328, AI636727, AI871660, AW004606, AI884318, AI633125, AW022308, AI579901, AW152182, AW020425, N25033, AW950438, BF811804, BF766531, AW021693, BF669151, AW022299, AW022981, AW020406, AI557238, AV753074, AW966420, AW021182, BG122005, AI701097, AA282824, AW953967, AI935799, AW960594, AW949931, AW953787, AV696791, AW952457, AI557808, AI887381, AI909697, AW961037, AW957058, AW023469, BF247298, AV687527, AV686414, AW965144, AV728592, AV683272, AV683443, AW951618, AW955082, AV708834, AW953974, AV686346, AV655425, AW960622, AV651436, AI283760, AV646347, AV725055, AV660773, AW959837, AV683513, AW961388, AV703222, AV703168, AW955447, AK021892, U06944, AF218031, AX015915, AF122922, AL117587, AF273680, AK000418, A77033, A77035, AL080139, AF267849, L35261, AF130056, X95310, A52184, AR038854, AK027052, AL133623, AL389982, AL117416, AK000414, AK025435, AK027209, AF124728, AL137292, AF232009, AF082075, A44314, Z13966, AF200464, AK026762, AB040710, AF060555, AF124396, I32738, AL161628, and X82397.
HFPHF52	815	1055304	1 - 2758	15 - 2772	AU130348, AA203203, AU137741, AU118352, AU139258, AV704315, Z78344, AV753316, AA033956, BF514743, AV703009, BF959037, AA460030, BF959893, R68616, W01743, BF962431, AV721634, H08927, AA065274, AV695644, R90946, R07050, N92694, AA328671,

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HBNMF62	816	105538 1	1 - 846	15 - 860	AL537976, AW956448, H07075, AA324184, AL520712, BE741654, AL524606, BG033728, BE794207, BF348472, R87835, AA378653, BF313918, AL537255, BE267461, BE267321, BF912788, W27716, AA136431, AU119617, AL133100, AK000538, and AK001070.
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HOPKL18	818	105543 9	1 - 2280	15 - 2294	AI761713, AI188464, AI148549, AI189375, AI057119, AI857728, AI189469, AI123521, AI160647, AW301093, AW131758, AW170213, BG104963, AI184253, AL048485, AI435827, AI743911, BF475827, AI983673, AI183288, AI189903, AI743259, AI911896, AI221537, BE676513, AI700325, AI221066, BF312132, AW167259, AI768353, AI199933, AI452807, AA864277, AA453073, AI209179, AI220687, AI743248, BF432034, AI741318, AA429293, AA479583, AI819317, AI167955, BG149848, AI951614, BG005361, AI367783, BE151673,

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HBAAE59	819	1055446	1 - 885	15 - 899	AA890595, AL036333, AI040915, AW007541, AV721272, BF439791, AW959421, AW083887, AI654275, AV722199, AA808896, AI800095, BF438031, AI355440, AI799635, AW604976, AA576448, AW006257, AA630283, AI559991, BG179455, AA743625, AI652663, AA151139, AI144203, AA604807, AI984722, AA194391, AI589272, AI755275, AI271562, AI560118, BF822480, AA151140, AW302262, AI167873, AI332444, AI801686, AA594332, AI148030, AI142313, AI090644, AI803537, AI373476, AI336084, AA554043, AU146489, AW022283, H29466, AI049688, AI041568, BE902412, BE328300, BF593596, BF822451, AV722821, AV682616, AA492300, AW193739, R42909, AA442117, AI285963, BF941682, AA081057, AV764612, BF839445, BF821831, H50360, N26936, AI872953, N66716, AI991792, T52344, AL036332, W95685, H91241, H68058, BE326879, AA928951, BE929039, BF734080, AI765685, AI536035, AA504565, AV722859, AA505844, BF845220, AA355104, T23042, F04483, D45524, H61892, AI003120, AI933999, AA989528, BF884269, BE843668, BF093624, H92604, AI470441, F08851, H50770, AA480590, AI468163, AA969568, AA612865, AA280393, AA632042, AI090330, AW894028, T52417, AW339041, AA301168, BE717578, AW845069, AW845073, AI905180, BF923457, H92264, AI905146, AI905179, AF091264, AF042857, AF069517, U50839, AC004814, and AJ006486.
HTXKD84	820	1055467	1 - 1833	15 - 1847	AL535115, AL535435, AL527788, AL528128, AL522629, AW964128, AL530568, BF690299, AI927433, AU143450, AU122604, AU120010, AL513898, AL528273, AU124013, AU117741, AL525487, BE512822, BE799364, AI929021, BF312371, BE747909, BE868722, BE622350, BE901551, AU134818, BG257575, BE278821, AU134124, BE278080, AU135723, BE903064, AW248980, BE267190, BF689756, BG248738, AW966750, AV722010, AA723729, BF002408, BE794373, BG168135, BE273143, BG029684, BE544741, AA573842, BE293074, BE264692, AW073760, BE869623, AA908776, AW955340, AW953331, AW629302, AW170127, BF591127, BG120515, BE883708, BE884952, BF219684, BE548925, BF678527, AA456271, BE773056, AW249233, BE267954, AI360166, AU117779, BE262787, AI363345, BE167602, BE888509, BE298528, BG058608, BG117800, BE257040, BG113720, AW247642,

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HTXRR82	821	105548 0	1 - 1663	15 - 1677		AL525841, AL528084, AL523788, AL530647, AL528085, AL530205, AL525887, AL523789, AL530206, AL530648, AL530020, AI741904, BG111251, BE783284, BE304619, AW246206, BE409176, BE797194, AW249939, BE896428, AA631248, BF837752, AI262225, AI076571, AI379987, BF760075, BE791843, AA747742, AW182741, AI039409, BE791484, BE898142, BE171695, BG008706, AI266555, AI470348, BF351795, R08484, AA316496, BE246277, BE243727, AA628030, AA034425, BF842855, BE243741, AA053916, BE273715, and AK026518.
HAIBU62	822	105558 2	1 - 2394	15 - 2408		AW960778, BF670863, AI891069, AI760315, AI658836, AI802396, AU145031, AU147448, AA857432, AI564713, AA191075, BE180121, AW007299, AI082050, AA923198, AA581379, AA228040, AI383961, R45310, AI828459, AA228150, AI655170, AA227869, AA292098, AU121676, H29021, BF733569, AU118481, AA191665, BE706359, H13408, AA291928, AA954433, H29122, AA345806, R20228, AA337411, BE465193, BE561996, R43321, Z41361, AA748172, AI915244, AA730958, AW381210, BF508602, AI017072, AA227488, AI784588, AI913410, AA960809, H06070, AV745980, W20232, BF671807, AA634199, AA362928, AF148848, AF076249, AK021646, AF155508, and AL133070.
HDTAY29	823	105563 2	1 - 1296	15 - 1310		AI655115, AW969080, AW340416, AI088414, BG168598, AU133786, AI766935, AW955824, AA432162, AI243534, AI355372, BF813174, AW340370, AA001958, AA127678, AA001942, AA121541, BE089820, BE089818, AA149985, AW996875, BF514913, AI806604, AL048412, BF663006, AA431143, BG167354, AI784544, BE005808, BE178989, AI219527, BE178950, BE005809, AA136529, BE172359, BF799552, BE178947, BE005724, AU144539, BE178953, AA026727, N39996, BF665736, BF184492, AI982645, BF246646, BE005719, BE005823, AI806323, BE005602, BE005615, BE005617, AA026615, BE089808, BE005616, AA992408, AW593294, AA993913, AW629540, BG036581, BF665789, AA043644, AA504274, AI863566, AA916510, AA904815, BF438331, BE765047, AI968518, AW629858, AA831295, AA152142, Z28590, AW378121, BF915893; Z19353, AW607533, AW999039, N27265,

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HCOQD79	824	105576 7	1 - 1192		15 - 1206	AL521552, AL521553, BE799414, BE796064, BF569290, BF057457, BE259781, BG031400, BG029406, AW246213, BE272289, AI991822, BG031562, BE794799, BE740782, AW005567, BE266149, BF568283, AI760253, AA552351, BE744461, BF316077, BE745416, BF796423, BE906148, BF569309, BE731561, AU144985, AW246651, BE728637, AW150853, AI144315, BE747742, BE745668, BE208604, AU118415, AA917665, BG028996, BF342097, AA847227, AI811247, BE047940, BF001891, AI056428, AW276233, BF568258, BG167035, BE742415, AA445958, BE393329, BF972798, AW027429, AI863189, BE892428, AI198367, AI480232, AI041893, AW083270, AA488920, BG176928, BE273932, AA430213, BG179522, BG104852, AI342849, AA568169, BF314050, BE264597, AA516013, BE741159, BE514797, AA946875, BE263994, AI032102, AU156180, AA662705, AA427415, F28974, AA604545, AA113999, BF939307, AW962896, AI971135, BF971760, W92520, BE514803, AW050759, AI749378, AA676954, AA113998, T80366, AW078903, AW075249, R73441, AA903416, H17946, AA488849, AI866021, R51976, F19320, AA300068, R73442, BE743046, AA703568, AA371201, BF439443, BE645932, AW406525, AI186416, BE267243, AA411354, BE728187, N99524, AA427414, BG032561, AA687478, N71680, BE512695, AW246412, AI198472, AA349876, BE885663, AA411732, AW793163, AA527471, R53313, AA913234, N99453, AW087551, AA494167, AA468418, AA825644, AI345370, AK001023, AL031724, AF118394, AF114169, AF220294, Z36821, AL031718, AJ012582, U68233, I92592, A27631, and AF035305.
HAMHN12	825	105589 9	1 - 1785		15 - 1799	BF526465, AW026325, BE542706, BE542707, BE855427, BF196774, AA864639, AI287672, AI885416, AI424243, BE855854, AW577426, BE858918, AI276664, AI342436, AI420272, AI298488, AW602166, AI732365, W79647, BF589550, BF437295, AA889422, BE677567, AI420762, AA228426, AI686213, AA224927, AW339154, AI146289, H93603, AA574391, AA228353, H05698, AA694242, AA224998, AW629590, AI000160, H93602, AW613178, AA631694, N90717, AA256985, W74079, AA256986, H27807, AA639700, AA781512, AI247191, BE856659, AA256485, AA333630, AI468186, R83652, H44430, C01115, AI380982, R83651, AI350743, AW577102, AA256868, BE817585, AI674835, BF330948, BF330943, AJ400877, AJ400878, and AF086390.
HODIY67	826	105600 0	1 - 4308		15 - 4322	AL524194, AU133020, AU118936, AL524193, AU119223, AU122342, AU121697, AI961260, AU133891, AU139520, AV710009, AV728811, AI335254, AW163596, AU127807, BG164222, BE886798, BG028956, AI798785, AI650480, BE932104, AA311103, BE541225, AV694234, BE780965, BE220832, AI040228, BF197063, BF434796, AW162882, W05746, AI267777, AW965426, AW386260, BF509507, AI768758, BF110042, AA746489, BE645065,

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HNTRS57	827	1056097	1 - 1585	15 - 1599	AL537894, BG258704, BE047764, BE868736, BF340077, AI801416, AI762850, BF434262, AI742931, BF439373, BE644804, AI138559, AI797233, AW188187, AI380612, AI522102, AA868281, AL043757, AA426266, AW473173, BE645012, AI016269, BE207382, AI950202, AA910365, BF115501, AW051847, AA453144, AI263901, BF590758, AA425975, AW662298, BE281125, AW673734, BF512736, AW025120, BE645067, AI866541, AW299359, AA410629, AW263141, AI801012, AI472095, AI127189, AI088811, AW571861, AA836887, AW516893, AA502586, BF439167, AA676768, N92308, AI038102, AI632072, AA875868, AW516321, AA902731, AI274022, BE138815, BF125686, AA863351, AI721215, AI963518, AI468226, AA235644, AW969404, AA161034, F27866, AI910725, AW000879, AA741323, AI289063, AI354994, AI139962, AW104375, AW194619, AW614642, AI537733, AW169223, AI990330, BF437477, AA554004, AA973055, AI673688, AA291376, AA460182, AA410817, T73725, AI940057, AA403305, BF745263, AI940055, AI940052, T73700, AI142749, AW614314, AI918714, AI364787, AI985850, AW340231, AW080372, AI749845, AV747392, AI686667, AI814114, BF746001, AA902525, W24702, AL048891, AA758059, F37331, BF745253, and AW372234.
HUKFL74	828	1056102	1 - 2429	15 - 2443	BE796779, BF314720, BE296316, BE311402, BF206459, BF313266, AW245438, AL134658, BE728308, AI991631, BE294807, AI991255, BG111031, AW001543, AW245796, AI830089,

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HTEBF05	829	1056104	1 - 767	15 - 781	AW340840, AW519058, AW161869, AI887324, AI885451, AI040985, AA405326, AA159189, AI612812, AA657959, AA298813, AV702726, AW963931, AV705545, AV661866, AV726708, AV705217, C15737, AW963940, AW954129, AW954735, AI557264, AV702189, AV696302, AV726916, AV702878, AV706278, AV725294, AW961666, AW951516, AW954772, AW963397, AW963117, AV703593, AV702148, U53476, D83175, AX027923, M89801, M89802, and A84916.
HOPKD19	830	1056275	1 - 1454	15 - 1468	AL514608, AL528469, AL528936, BE746015, AL521772, BF690094, BE790826, BE790935, AL518173, AL515593, AL518172, BE742331, AI191053, BE729223, BF530756, BF312746, BE792243, BE901574, AL515819, BF664201, BE795515, BE900232, BE887232, BF303634, BE535191, BE729997, BG177383, BG248306, AL529609, BE544736, BG106483, AA826340, BF982191, BG253167, AL515592, BF982788, BF525820, BG108991, BE728913, BF974236, BF528108, BG031382, BG031585, BE777805, BG119661, BG121579, BE264024, BG167191, BE791853, BE378819, BF797508, BE549254, BF980530, BF797481, BE778043, BG028063, BE745313, BE563774, BE782976, BF794209, AI625492, BE909865, BF345302, BE543174, BG250283, BG250199, BE544765, BE379191, BE543875, AI434163, BE778018, AI188794, BF309788, BE545242, BG117942, BG110383, BE251838, BE898982, BF308052, BE409243, AI986077, BE545315, BE389907, BG117495, AW001257, AI499406, BE275460, AL514607, BF314282, BE276384, BE383327, BG259890, BE389361, AI608736, BG115641, BF237552, BE536648, BF315248, BE548410, BE277397, BE389020, BE304445, BE255993, BE734099, BG112690, AW172971, BE544670, AI609082, BE900812, BE784989, BG027636, BE744256, AI624012, BF128698, BE257241, BF316397, BG258382, AW575251, BF307121, AI735180, BE535951, AW575944, BE382554, AW572325, BF439251, BF337954, AL515818, BG025498, BF526215, AW951827, AI818207, BE388264, AV702179, BE389281, BE222313, BE276340,

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HLICR58	831	1056290	1 - 1586	15 - 1600		AI174900, AV649110, AA779097, AI023884, AA700364, AI052207, AV681541, AI183788, T60326, AI040537, Z20967, T60354, AW341516, AW513549, AL531814, R60754, BE079865, N90892, BE141316, AI124860, AA625858, AW844137, AI253241, AI253247, AI793247, AF181467, U55765, AC009228, AC009949, AL022393, AL360089, AL158159, AL031313, AC005034, AC022360, AL138958, AC006398, AC000386, Z69714, AC009482, AL118525, AC006460, AL445188, AC025472, AL139150, AL049796, AL031726, AJ400877, AL354933, AL022069, AL049797, AL445437, AL356752, and L78833.
HISBE12	832	1056376	1 - 2587	15 - 2601		AU133566, AU134630, AU137852, BF672805, AU138245, AW953092, BF574374, BE069938, AA418061, BF126477, AV704855, AV733475, AA490669, AI126748, AW021070, BF107314, AW169111, AA044844, BF432458, AW963336, AA917826, AI859443, AA402341, AA134033, AA772171, AW261848, AI979109, AA411838, AA827550, AA993572, AA490670, AI689396, AI564514, AI589042, AI962882, AI951442, AI457657, AI274779, AI126270, AI859726, AA846743, AW139081, AU155829, AI887980, AI560718, AI131563, AI160023, AW139075, AI244973, AI288216, AW167802, AA449011, AI092410, N71091, W23461, AA001805, AA024894, AA771989, AI332470, AI362305, AW022540, AW129473, AI357333, AI524525, N40765, BF106969, AI276660, W72460, AA099736, N70641, AA417957, AU157537, AA563938, AI355584, AA860530, AI734946, AI344521, AI185811, AA954648, AU155547, AW166786, AI028138, AI276661, AW771189, AU157338, AW419084, AA452645, AW168035, N90530, AI801066, AA983225, AI041476, AI424177, AW152395, AW189459, AI344395, AI015682, AI127313, W76518, AW014696, W05460, AI266450, AI689224, AW515862, AI016555, AI298435, AW024736, AI569566, AI095864, AI475928, AA614454, AI539532, AI630231, AA056733, AW591105, AI874113, AA133968, AA934658, AW474609, D82422, AI031797, AW513075, AW129011, AA099737, N40768, AI579994, AW150847, AA058387, N22767, AI690491, AA226177, AA226521, AI299561, AW518280, AA781624, AI138761, AI680522, AW088795, AW194041, AI318244, AI973210, AA027095, T57193, W44853, AA693819, AA860686, N30057, AA825328, AI889552, AI913873, AW050479, AA005320, AA737576, AA010720, AW572031, AV740811, AA843163, AA782544, AI026970, AA772466, AA450017, N71006, AW590986, W32273, AW152339, AI804555, BE169187, AA001714, W32000, AA993329, AA347504, AI263677, AW591684, R91853, AI824356, AI470261, BF431703, AA386154, AA772584, AA632359, AA863458, AA860713, BF574018, AA004243, N94949, AW132079, W32023, AW513318, AI191171, T57088, AW151046, AI289935, AI678407, AI800349, T55946, W05488, R92692, AV744992, C75173, AW512959, BF358693, BE939009, H13885, D62503, N30060, AI623948, H22323, AW473204, AI344807, AI564394, BF889143, AA450366, T97372, AV741769,

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HAJAH48	833	1056400	1 - 934	15 - 948		AW813259, AW813211, BF375077, AI910050, AW966053, AW966534, AW978634, AW966531, AW949633, AV699927, AW975618, D51423, AV720203, D58283, D80391, AV718440, AV720028, AV718770, D80166, D80038, D80196, D80195, AW975621, D80253, D59619, D80210, D51799, AW960553, D80240, D59859, D59927, AV719822, AW966054, AV718489, AV718692, AV719188, AW973307, D80227, AW966062, AV719324, AV719783, AV699447, AW959628, AW959570, AV718800, AV720211, AV718844, AV720464, AV719557, AV720731, AW959582, AW965177, AV722801, AV723927, AV724520, D80212, AV699550, AW949656, AW949642, AW966013, AW966041, D80188, D59889, D80219, D81030, D80269, AW949641, AW949645, AW949657, D80043, AW959597, AW949618, D80193, AW964488, AW959202, AW978661, AW965158, AV719468, AW949655, AW949629, AW966050, AW949632, AW949654, AW949631, AW949643, D80366, AV723097, D50979, D80022, AV720812, AV721386, AW966043, C14429, D59275, AW949646, AW973447, D80164, AW949653, AW949658, AV700889, AV720791, AW960465, D57483, D59787, D50995, D80045, D80378, D59502, AV718633, AW975605, D80024, T03269, AW959799, D59610, AW965197, C75259, AV720654, AW973485, AV718931, AW964737, AV742001, AV742667, AW965185, AW966022, AV701125, AV701335, AV701166, AV701043, AV701332, AV701017, AV701248, AV742048, AV701431, AV700229, AV699669, AW959469, AW978648, D80241, C14014, AW965176, AW973541, AV719628, AW973334, AV681510, F13647, AV681491, AV699682, AV719049, AV701419, AV742430, AV701154, AV718707, AW964756, AW966065, D59467, AV645389, AV718938, AV645344, AW964477, AW956434, AV699746, C14389, AW966029, D80134, C15076, AV701443, AW752082, AW965163, AV645343, AW958992, AW958993, AV699479, AW959136, AW959062, D51250, AV701130, AV701149, C14331, AV701422, AW962245, AV719913, AW966075, AV719000, D80268, AA305409, AW973474, AV744770, AV681529, AW960473, AV718530, AW966560, AW956397, AV718674, AW965184, AV720220,

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HEEBK29	835	1056454	1 - 4861	15 - 4875	BE745399, AL522262, BE908201, BE906253, AU125614, AW089583, BE621787, AW243446, AV690793, AW192502, AI858615, AI890773, AI970297, AW080065, BE621228, BF475568, AI814791, BE621889, AW960683, AW439633, AU127824, BE046311, AI963657, BF114979, AW090100, AW513648, AI262027, AV696242, AW341634, BE973619, AI963327, AI433025, AW302356, BE620975, AU149236, AW070352, AI806420, AV727879, AI891026, W67512, AA548361, AI185836, BF880354, AW771451, AI815002, AV727686, AW007829, BE677332, AI123019, AA909672, AW514323, AW172713, AW604822, AA565581, AI741211, AW264387, AW380912, AA156812, AI951055, AI884448, AW243679, AI138743, AI922781, AA676839, BE389394, AA317453, BE075417, AI744347, AA063600, BF941222, AI278214, AA780893, BE392908, AI138737, AI372874, AA826478, BF476022, AW088824, AA428436, AI433274, AW074533, H66739, AI348515, BF594677, BE908514, AI087015, AA493387, AI302133, AA742411, AI610422, AV698069, AW303594, AA036681, AI679072, AI985287, AI676253, AA156716, AA983385, AA099281, AI382076, AI204685, AW517675, AI299065, AW515199, W68125, AA443895, N65966, AI628488, AI138741, AI445997, H66738, AW193226, AI499793, AI129495, H43558, AA429214, H42969, AW192218, AV689623, AV691878, AI589031, AV660284, AI888422, AI873783, AA746039, AI985285, AI434459, N95436, AV688537, AA738493, H92124, AW268393, W03866, AA913077, AI537365, AI273983, AI249320, BF312684, H42899, BE466338, AI809446, AA099280, W01930, AI633945, AW771119, N55529, AI129773, W24048, W73426, AI288122, BE906823, W73381, AA826526, AA969783, R94455, AI129884, T03693, AI245885, AA961183, AI866118, N46259, N73753, AA910025, H43559, N81029, AA846611, AI217549, AW515007, AL047369, AI382852, R66548, AI610829, AA927406, F12821, AI625372, AW339822, AA449955, H27222, AA193615, AA888180, H08667, AI372912, AI928559, AI915591, T57021, BF943560, AI634405, AA009986, AI223972, AW513899, T72813, N80311, AI241051, BF061815, AW075328, AV685591, R66549, AW136127, BE166191, AV693190, BF530633, H47698, AA295509, R94163, N94227, AA444089, AV697388, AA380196, BF436805, AA478750, AA582325, AL040492, N71032, BF057259, AW137045, BE965435, AI872536, H08668, H28576, W81416, BF568352, AA699883, F02853, AI926224, AI964083,

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HCHMM19	836	1056617	1 - 1725	15 - 1739	AL534327, AI096506, BE378797, BE392697, BE388530, BE563058, AW965878, BE392233, BE392568, BE562786, BE816336, AW602150, BE816332, BF724233, BG012790, AW950293, AW088625, AI623455, BE259257, BE816333, BE712877, BE712851, BE712863, BE712874, BE712876, AW445054, BE392522, BF339456, BE869413, BF353807, BE730799, BE712859, AI378021, BE712921, BE712852, BE712926, BE712924, BE562748, AW089470, BE712978, BE712856, BE712865, BE712923, BE712992, BE712869, BE712985, R54862, BE712979, BE712983, BE713014, BF877112, AI334787, BE712858, BE712997, AW089731, BE712969, AW148926, BE712993, AI565144, AW102888, BE712896, BE713017, BF829674, AA477654, AA410250, R53118, BE764760, BE392951, AW058228, R52267, BE712973, AI688979, AI744763, N59116, AI061201, R73552, AA410601, AW072414, R54001, H24954, AW243859, AA479843, T53386, BE693883, BF792651, BE712906, AA402649, AI653791, AI499132, AI886419, AA359265, BE712928, BE712931, R48059, BE712934, BE712927, AI887407, AI830659, BE712940, BE713027, BG010635, BE712909, BE764724, R48045, BE712950, BG164045, AA402646, BE712952, AW770834, BE713018, BE713010, BE713009, BE713013, AA411137, BE712949, AI653885, BE712913, BF873070, BE713011, AA358698, AI873571, AA633384, R52266, AI174895, BE713028, AA322308, BE713024, BE713016, BF761627, BF873089, BE713022, BE713026, AA291585, BE712958, AI804837, AI432124, AA394269, BF876486, AL534328, BE713030, AI524776, AA358907, BF876484, BF829815, AA293640, AA430383, R47936, AW193891, AA410602, AW473257, AA411455, AA427751, T53385, AI537722, AA236709, AW028475, BF875028, AA477340, AA427752, AI288000, R06662, AA411583, AA406031, AI860014, AA479650, BE139492, BF353825, AA479720, R35771, AW130914, AA430736, AI684263, AA479554, BF931748, AA428857, R63600, AI870177, AW103389, AW194324, BE712932, C05050, AI538811, AI887289, AA481946, AW150649, BF749660, AI914715, Z19749, AA476975, BE869834, R54871, AI918638, AI684209, BE613048, AA757345, AI525964, AW150617, AA430560, AA402931, AW338545, AI283299, BF740522, AA426533, AA290786, AW438957, AW793096, AA292401, AW439076, BE076592, AA367777, BF036210, AW793132, T47453, AI538248, AI524589, R72922, AI689706, AW450212, AI241778, AW302585, AI683101, AW275299, AA284900, AA989478, BF745978, AW381828, AI873903, R47950, AI918551, AI873999, AA890124, BF445784, AI591415, AI364586, AW593602, AA428332, AA433977, AW089004, AI524580, BE699717,

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HE8NG02	837	105662 5	1 - 1215	15 - 1229	AI123839, BF439260, T12179, BF679243, AI039039, AI146280, AA236166, AW962409, AA297231, AI147044, AA453695, T12180, AF191770, AF191769, AF191768, and AL035608.
HWHKD22	838	105665 4	1 - 1310	15 - 1324	AI829903, AI986119, AI633646, AI769747, AI984540, BG055419, AW518841, AW337994, BG259048, AI769807, AW518894, AI610118, AW566008, BE674641, AI354761, AI696473, AU150348, AI371756, AW014492, AI815233, AA205305, AA442702, AA811626, AA418029, AV747886, BF884881, BF969470, AV747168, AA808125, AW589703, AI680927, AI632886, AA418089, N70046, AI825035, AW302373, N25678, H39858, AI298620, AI915190, AW770054, R86213, BG149822, N64316, AA810844, AA846497, H28050, AI916429, AI299340, AA633452, BG054552, AW518887, BF447929, AA496038, AL536729, BF446446, AW771301, BF857012, N55216, BF857010, and AK022876.
HOCPJ87	839	105666 6	1 - 1484	15 - 1498	AL518904, AL518905, BE616371, AI828880, BE615355, BE531320, AL513808, BE616160, BE531166, AL530739, AI436189, AI829057, AU119325, BG252803, BF002498, AI192809, AA836407, AU116821, AW006012, BE543906, AA477822, AW170329, AA580307, W74534, AL041460, AI333563, AI589612, AA569804, BE857996, BE780663, AI126528, AI718912, AA428893, AA507376, AA424547, AA769260, AI291503, AW974150, AA410533, BE925853, AA478220, AA022829, W79545, H28373, W84807, AI149621, AA284250, AA410308, BF845479, AA424635, AV749126, AA838115, AI126137, W79363, AW801410, AI221412, AA934373, W01406, AI923931, AA729488, AW613142, BG167622, AW518106, AI357146, W84808, BF737247, AA253039, N70789, H25595, AW801537, N68230, AA022828, BE812559, AW801332, AA352675, AW176646, AW401979, AI749443, AA292613, AI985391, N36778, H28398, T29515, F08556, N45939, N77827, AA193262, H25550, AW751653, AA937981, N28457, AW081522, BE000431, AA814116, BF748285, BF760942, BE183148, AI188907, BF056502, T25961, AW366647, AI340862, AV686817, AV689385, BF986723, N87297, M25393, S52655, M80739, M81477, X58828, and M81478.
HAAAA59	840	105667 1	1 - 6052	15 - 6066	BE890597, BG109730, BE733024, AU140104, BE889571, BE546473, BE889587, BE730721, AU138672, BG259764, AI718282, AI709383, BG163913, BE779177, BE734224, BG031798, AV707879, BE408475, AW368622, AW272235, BE900705, AV721483, AW470101, AW471310, BE891068, BF435568, BE386130, BE901385, BF980199, AW392816, BE894916, BE220160, BE903247, AW392815, AW076072, AW392813, BE734460, AI671707, AI628226, AW572916, BE540311, BG122367, BE273197, AW499944, AW769234, BG235985, BE549113, AW470123, AL138202, AW629754, AI887486, AI984572, AW996987, BE296360, AL353974, AA732450, BF895267, AI859535, AW080807, AI523527, AI752689, AI693382, BE892451, AI984050, AW131290, BE048752, AI922765, AA777248, AI832002, BF185637, BE048701, AI346505, AA922780, AA521201, AI954924, BF844854, AU157701, AA557382, AI888131, AW269811, AI608617, W72219, BF698993, AI681187, BE559573, AA932106,

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HOSBJ18	841	1056672	1 - 2689	15 - 2703	AU132197, AU135985, AU138727, BG260506, AV726837, BF793520, BF345717, AV702929, AW439565, AI827530, AI887525, AW118200, AW801248, AI890158, AI859703, AA167094, BE175387, AA430563, AA883993, AA029288, AW662754, AU157723, AI095763, AW630944, AI279436, AW937419, AI634574, AA749212, AW966597, AI598263, AA993239, AW662852, AI079917, AW243702, AI634584, R70961, AA971019, AW780141, AI926025, AA043743, AA452390, AW131171, AI219729, AI610785, AA969116, AA132531, AI818902, AI243449, H02869, AI922025, AU158190, AW627656, AU155589, AA021150, AA433979, AW769987, AA579993, BE165647, AI220990, AI469540, AI300047, AA621433, AA029756, AU131744, AV755425, N51151, AA166907, AU156407, N47896, AI288925, AA888601, AA912768, BF674302, AV708374, BE175399, BE832329, AU126967, AI926028, AI183313, AA937998, AA602187, BE734288, BE706930, AA834867, BE251990, H03766, BG027418, AA132592, BE253942, AA866089, AU156259, BE255873, BE256052, BE257877, BF348897, BE254914, AV705050, BE255702, BE536889, AA342184, AI873839, BE257993, BE161730, BE251753, AI017196, BE256952, BE254487, BE886141, H88995, BF915387, AW749734, AW887332, AW367251, AA369249, AI926057, AU123294, BE927508, BE880918, BE673902, BF335051, R68839, R70915, AW367256, BE901334, F04001, AW250092, AA911119, AW386242, AA336851, AW367300, AV764447, AW384427, AA043742, AA028917, BE900678, BE843977, BE767608, BE938819, W52994, AA349969, BF351610, F07748,

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HUSGX12	842	105673 6	1 - 2100		15 - 2114	BF115810, AI762621, AI742202, AV697686, AA446863, AW028794, BF590994, AI394107, BF591454, BF513446, AI221779, AW052092, BF063224, AA535268, AI183672, BF514504, AI917745, AW296681, AW297154, AI802689, AA778418, AI122998, AW471212, AV685546, AA902908, AI193482, AI610870, BF054957, AV690497, N81132, AA476226, AV689052, AA677378, AA476227, W07484, BF478080, C16879, BE834460, AA446978, H77651, N75843, AW296006, BE834454, BE834440, BF002658, AA621641, BF513325, D12199, W19304, W07640, AI354319, AI475969, AA906878, H77652, AL134524, AL045327, AL134110, AL045328, W07635, AW968212, AW969911, AW970050, AW969988, AW970070, AW969748, AL047163, AW601637, AL042898, AW972357, AW972220, AW974660, AW970025, AW970101, AW971738, AW858522, AW968204, AW970053, AW970079, AW968336, AW968207, AW969778, AW970084, AW972594, AW976022, AW973652, AW970094, AW975147, AW971172, AW970108, AW975628, AW975391, AW970107, AW970540, AW972724, AW979227, AW979127, AW975158, AW971301, AW975685, AW968181, AW974098, AW975434, AW974378, AW971725, AW968215, AW968200, AW972273, AW975061, AW971207, AW975031, AW975383, AW972279, AW969996, AW969634, AW971126, AW971114, AW971038, AW968196, AW968347, AW972845, AW979037, AW978995, AW969784, AW971042, AW971290, AW979105, AW972686, AW979136, AW979238, AW974805, AW975443, AW968340, AW973774, AW968168, AW969653, AW971184, AW972897, AW974871, AW970076, AW577201, AW969624, AW969823, AW969734, AW969864, AW969664, AW970020, AW969862, AW969809, AW976024, AW969826, AW974390, AW970105, AW861914, AW969798, AW969648, AW969876, AW969848, AW969888, AW969934, AW972665, AW969936, AW969961, AW979161, AW970093, AW971940, AL037295, AW969916, AW970014, AW969621, AW979138, AW972212, AW969926, AW969958, AW969631, AW969651, AW970095, AW970118, AW972229, AL038838, AW970074, AW970032, AW972218, AW971299, AW970069, AW970096, AW968190, AW970023, AW974346, AW969691, AW976040, AW969698, AW970531, AW969632, AW970122, AW970115, AW971737, AW968338, AW972380, AW972372, AW969697, AW970886, AW970003, AW972362, AW972835, AW970075, AW969625, AW969677, AW969626, AW970859, AW968147, AW970036, AW970054, AW969642, AL037343, AW968148, AW972228, AW968150, AW971187, AW970619, AW972849, AW974096, AW972717, AW975019, AW971726, AW972642, AW972926, AW969628, AL038651, AW979077, AW979080, X95701, AR088747, D87811, S82462, L22760, AF179425, U11889, U51335, AB034243, AB034207, AR066494,

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HPDRG02	843	1056764	1 - 2158		15 - 2172	BE740652, AI823584, BG171310, BE878882, AW411439, BG166780, BE906086, AI738670, AI815554, AW411440, AI056402, BE262512, BE877434, BE537553, BE789460, BE867534, AI658796, BF035412, BE875754, AI634741, BE617343, AW393490, BE876210, BE871919, BF340756, BG024047, AW820946, AW373531, AW820897, BE048051, BE879337, BE048598, AI819079, AW571769, AW364602, AW580228, AI968762, AW245315, BF590952, AI674100, BE071871, AW580233, BE876307, AI869292, AW384848, BE620263, AW152279, AI262789, AW820801, AW608412, AW731673, AL529564, AW574850, BE271554, AA209480, AI755183, AI589643, AI656369, BF338937, BF475268, BE934850, AW401380, AV700085, AW236549, BG231513, AI687271, AU160081, AA847360, AI418295, AI985588, AW119103, AI217351, BE909190, AW016080, AW608420, AW131023, AA630269, BE464492, AI149427, N78179, AI459620, BF593096, BE879192, AI554812, AI640839, AI289506, AI268192, BE313248, AW513453, AA931552, AW058369, AA813634, AI347031, AI804259, AW090211, AI023516, AW069813, AI752976, AW820999, BG116353, AI088760, BE502154, AW402830, AA768964, AW002017, AI075703, AW673691, BF912726, AW613623, AA501894, BF056551, AI869699, AW117841, AI879509, AI587532, AW088852, AA419154, AI860748, AW590575, AW820882, N23571, AI083954, AA551989, N36125, AW118704, AI582641, AA430497, AI014467, AA159184, AI969972, AI263126, AW276084, AA707165, AI469114, N22868, AI816495, AA858117, AI857776, AI018617, AI086473, BF993501, AW975321, AA430615, AW771778, AW860492, BE940584, BF912687, AW821020, AI499659, AA577158, AA134113, BE146324, AA226941, N26266, R52309, AA035350, AW022630, AI628121, AA411681, AA974019, AW664863, AW072821, AI992296, BF813511, BF594364, AI880357, AA846048, BE933452, AI564340, BG168373, BE873734, AW072810, BF806150, AW276091, BF951215, BE873926, AA503631, AI695958, AA135227, BE878360, AA159279, AI357749, AI688770, BE076556, AW997254, AV749793, AA113061, BE784393, AI559423, AA884640, AI332794, BE935220, H79618, BF949317, BF949336, AW406267, AI984860, AA337025, AW378543, AA302570, N59626, BF087435, AW025306, AW821028, AV683126, AV688200, AV691923, AI203166, AI632661, N93344, AI424079, AV696315, AA330793, BF756713, AA079425, AA280167, BF816528, N33283, AI066652, AA603468, H56757, AV684426, T90349, AA227048, BE463449, AV697361, AW378523, BF886853, AW449882, W78180, AI203210, AW663171, AI886503, R37349, AA336361, AV697357, BE149771, F12979, AW378539, BG164953, AA291431, AW820943, AA515270, AA636029, BE900663, AA227036, H98849, AA113144, AA216614, AI270424, J05016, J05186, M86870, Y00884, T93550, T75358, T88819, T83030, T84206, R12463, R15281, R38684, R54472, H56677, H61562, H79619, H85766, N33287, N44131, N73592,

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HKZBB48	844	1056767	1 - 3089	15 - 3103		AL527534, AL528100, AL528099, AU141374, AL527533, AA627060, AW583882, BG031934, BE893127, BG117798, AV646601, BE883230, AU139703, BF971077, BG104739, AV708971, AV717404, BG104799, BE391166, BG104920, BE888433, BE082207, BF672673, AW575502, BE618015, AV696422, AU127682, BF240237, BF540950, BG118118, AW610245, BE251862, BE736295, AV705651, BE258330, BE222306, AW369549, BE255626, AI765556, BE908816, AV693119, AA161107, AI086080, AI285880, AV694192, BF029982, AI819359, AW088298, AW960725, BF207747, BF185163, AA418207, BE541746, BG033654, AI935312, AI935621, AW369538, BF130511, AI015569, AW513162, AA939269, AA448471, AI632610, AI041572, AA701947, AW384755, AA418072, AI129765, AI299834, BE972618, BF219225, BF696393, AI684697, BG180914, AA563729, AI368095, AA872409, AA889242, BE218751, AA071220, AA436287, AL039050, AW953085, AA860248, AW384752, AW135201, AI701386, BG149571, AW959685, AI079776, AW995991, N94822, BE694983, AA845922, AI538873, AW583510, AW385569, AI245209, AI702910, AA857211, W05711, AA771798, AI208955, AU158953, AI378351, N24653, AW162926, N62157, AA158824, AI753006, AI219664, AU158141, AW960726, AW591155, BF104126, AW675044, AI204096, AA564813, AI985502, W03098, AI016403, BF746829, AV686794, AV685681, AA281342, W31665, C21426, AL035875, R66327, AA362226, AW674313, AA984012, AW293080, H03830, AV733840, BF447356, AW408039, AI309266, AW292238, AI862340, W15589, AI205711, AW408706, AI480297, R35709, AW373189, AW515420, AA313003, H84196, R49345, BF448740, AI435282, AV695502, AW294142, AA928614, H20897, AA483880, R06575, D61535, R53318, R66328, BE074636, AI696620, BE082764, R81443, AW407498, T32732, AI525293, AI269399, N75033, BE909618, BE081617, R25491, R67469, H80019, BE672304, AI218647, AI653129, AI770121, H03831, AI208629, AW513131, R81646, Z32775, AI381335, H19524, AW575666, AL079570, R06628, AA328279, BE709217, AW118713, H19452, AW795355, BF928430, BE176296, N76261, AL079569, BE071857, AI865287, R43221, N79285, AA318949, BE765956, AW749627, AI270007, N35440, AW795259, AA872775, AA347278, AL079568, R17128, AA356457, AA600029, AW899780, BG104722, AW964074, W23879, AB022663, AK023884, AK023698, AF060544, AC005740, AB015333, AC083862, AF249667, AF249668, AC004893, AX009343, AX009341, AX009337, AX009335, AX009345, AX009342, AX009344, AX009340, AX009339, AX009336, AX009338, and AX009334.
HHAWB19	845	1056774	1 - 2149	15 - 2163		BG252201, AV726464, AL529709, BE894106, AV726994, BF970560, BF132059, BF977798, AI703275, AW512938, BG164577, AL529708, AI767521, AI823746, BE220262, AA583438,

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HHATP38	846	105678 6	1 - 1140	15 - 1154	AL529876, BG167387, AI300509, BF034876, BG031449, BG164001, AI471460, AI524696, BF314865, AA633535, AW242169, AI141331, BE045747, BE221399, AI805778, BE297480, AA843665, AI571521, AI299824, AA434485, AA434389, AI569021, AA843530, AA082818, AA741539, AI805251, AV704867, AI308147, BF128614, AI091655, AI308088, BE904001, AI749633, AA746258, AA040199, AI497961, AA948212, AA040843, BF197824, AA742966, AA983317, AI371855, BE783995, AW952041, AI420031, AA469054, R56770, AA535588, AA352350, BF850175, AA292448, AI284332, BG167521, AA630120, AA400486, AA310070, AA182397, D80973, AA304346, AW770337, AW606565, BF876874, R88630, H28025, H39505, D80974, BF054728, N87395, BF054746, AA932606, AI581555, R90829, AA400532, AI720121, F32140, BF197523, R90830, AI687256, BF876828, BE157170, BE157094, BE157173, BE157093, R29477, T08411, BE157099, BF751287, BE157098, AA419103, BE157092, AA917955, AB004273, U43368, AB004274, U52819, U43836, AR060515, U43369, U48800, U52820, AR060517, U43837, AR060512, AR060513, AR060511, AR060516, AF022952, AR060514, AF032925, AF099134, U43370, and U80601.
HVVBE07	847	105680 1	1 - 1125	15 - 1139	BF115907, AI347987, AW571531, AW469391, AI318417, AW469530, BF732916, AW519112, AI745619, AI624640, AI148123, BF439103, AW246565, AI049532, AI141077, AW304970, BE328487, AA417098, AA838314, AA649876, AI954020, AI347379, AA614714, AU155615, AA029774, BG057767, BE350234, AI241721, AI422257, AI148124, AV721594, AI359911, N70830, AI359059, AA159067, BF968305, N67615, AI049846, AW015705, AA009674, AA373582, AI174368, T27684, T56814, AA069201, AI267963, AW118346, W73079, H81485, AA121951, AA055076, W07306, AI191548, AI808436, R40817, AA035256, AA773059, AW166460, AA773057, AI214117, N93955, AA156330, AW675349, AA872378, BE793803, BF982619, BF858206, BF858207, T29598, AW956178, AI252634, AA629421, AA055136, T56813, AA302186, H25812, AA308949, AA418136, BF208253, AW023605, AI611964, AA977778, AL524944, T50650, AW166214, AL037765, AI741822, BG036833, BF953193, AI916187, AW899528, BF207696, BE881367, AA081611, T47416, AA393875, AW496811, AL036550, BF822724, AW082037, AK025842, U60477, M64497, I89201, X76653, U07635, AF003944, AJ249441, U00697, X16155, X12795, M62760, AB012582, U16683, U50354,

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HKAHB85	848	1056804	1 - 1339	15 - 1353		AI189624, BE798410, AI826306, AI742365, AI923164, BE742614, AI523767, BE612598, BE730876, BF568739, AI743357, AI923662, AI874405, AI582377, AI951036, AI830906, AV722920, BE857117, AI864666, BE552477, AW269479, AI453638, AI658863, AI609762, AI935343, AI762473, BE251544, BE966347, BF059081, BE222650, BF434095, AI457104, AI192517, AI262763, AI312553, AI128385, BE392107, AI184898, AI208329, BE780463, BF111625, AI937815, AA156715, BE613338, AI084901, AI923949, AA156811, AW007906, AA478088, AA516138, AW194068, BF593875, AI074507, BF590787, BG054965, AI123728, AI923959, AI342586, AA725089, AI199610, AI369183, AA039529, BF000406, AW500544, AI694026, AI743576, AI285358, AW298302, BF242393, AI559628, AW803113, AV724161, AI472176, BF941760, AA135658, AV724606, AA714301, BF115666, AI830771, AW512691, AA846737, BG248683, AW006013, BE796082, BE889162, AA559059, AA887841, AA742700, AI910998, W45621, AA514670, AA047549, AA039510, H12597, BF221654, AI675498, AA075686, AW136156, AW628392, R36089, AA188215, AA340528, BE674700, H12647, T28463, BE219841, W28363, T19366, T19367, AA186362, AW044216, AA872728, BE796300, AI869260, AA419332, AA079138, BF130394, H26663, AI864116, BF182762, AI908177, AA328427, AA287370, AA425996, AI022515, AI015637, AA018470, AI935563, H30032, BF309963, T39530, H26648, AA283917, AI201855, AA018144, AW002235, AA147931, AI970783, AA074201, AA453079, AW967024, AA666180, AI767839, AI818846, AA971961, AA522463, AA971644, AI908203, W45569, BE267358, H20096, AI658744, AA524207, AA147502, AI560299, H20021, H23586, AI695631, AW028597, H19534, BF213007, AA057785, AI695962, W15192, BE392656, H30033, AI864118, AA047837, AA283918, BF315308, AA452911, T64430, AI935201, AA477630, AI911950, AW663032, BE264884, AA810162, BF183741, AA514790, AA425791, AA706619, BE378391, AI249587, AA135599, BE817810, AA399044, AI792444, BE872189, N78686, AI054233, AI053971, AA018145, AI191224, BE049111, AI523309, X12794, AF003926, X76654, L25674, and AW002470.
HUSXA15	849	1056810	1 - 290	15 - 304		AL524678, AL525517, BF968916, AI954468, AI567133, AW300897, AI669011, AI660855, BF448589, AI635690, BG236776, AI815794, AW874612, AI480193, AI366904, AI537283, AW593618, AI817467, AI751715, AI366942, AW593632, AA459301, BE047378, AI016670, AA477441, AW161913, AW161619, AI926577, AI859809, AI983583, AW001554, AW264376, AA284935, AA404681, AW088937, AI038308, AW440417, AA653631, AW262712, BF115584, AA058887, AI984462, AW249502, AI798533, AW172776, AI750245, BG056549, BG055715, AW131904, AI864472, BG223340, AI434101, AI219769, AI028334, AI476359,

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HNOCH54	850	105683 9	1 - 2156	15 - 2170	BE260056, BG035487, BF344378, BF526374, BF984346, AL042576, BE260510, AI978623, AW961029, AW410058, BE314256, AU134349, BG253002, AW964329, BG031222, BE783064, BE395235, AI818399, BG003227, BF087734, AW995362, AI038345, BF313051, BF087860, BE205802, BE350196, AA699733, AA921973, AW967225, AI033886, BF758009, BF087837, AI365948, BE712425, AW615817, AA430575, AA219262, AI921951, BG031861, N42316, AI219706, AW297541, BF087848, N29539, BF996630, AA113157, R11659, AA478187, AI051886, AI805015, AA961539, AA478030, H98088, T57479, BG015611, AA878785, BE712676, H53625, AA350477, AW247055, BE939228, AW751613, AA599679, T77392, T49353, R12265, F13292, H53664, R45397, BF932652, AI288384, AA338766, AA350476, AA430576, R39518, T49352, AI221193, R25058, T16558, BE931199, AA299814, AI240918, AA350478, AW630432, AI368888, Z41335, AI241134, N57473, F10891, Z44605, BE887369, F08331, F05060, BF378261, AA321390, T57507, T32113, AI798318, AW197803, AW874491, R45833, AW250407, AA112401, F03653, BG004651, T08801, AI547229, BE168979, AI926462, BF378510, AI905001, AI719695, BE184647, AW273717, AW878730, Z24861, BF038255, AW860261, BE168984, AK025946, AF035292, AB014557, and AC009955.
HOCPP16	851	105685 6	1 - 1027	15 - 1041	AL522455, AL528025, AL532452, AL523902, AL524678, AL528052, BF340685, AL525320, AI815794, BF526000, AI800143, AL527163, BF337577, BF116185, AI926577, BF206655, AL530392, BE383255, BF206587, AI480193, AI499226, BF207314, AI669011, BG257349,

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HNOAH83	852	105686 2	1 - 1537	15 - 1551	AL529607, AL525913, AL536158, AL520415, AL520414, AL526120, AL529606, BE871581, BE799282, AU119186, BF337601, BE908277, AA826247, BF344321, BE273446, BE797849, AI127898, BG115251, AI809875, BE880755, BG169799, BF525762, BF526032, BE907671, BE872651, BE407091, BG119008, BE908601, AL529168, AL529167, BE910353, BE868097, BE548520, BE617451, BE250135, AV707005, BE870326, BE898755, BG251022, BE311912,

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HE2OU10	853	105687 5	1 - 879	15 - 893	BF664061, BF663274, BE890780, BE906383, BG104225, BE905149, BF245736, BG104459, BF213989, BF669215, BE777522, BE745173, BF207769, AA307765, BF130113, BE733011, BE296137, BG255970, BF026737, BE894590, BE891634, AW732973, BE385310, BE277240, BE727813, BE266671, BF026593, BE386183, BE386351, BE407399, BE409533, AA069652, BE385159, AU140029, AL037677, BE872592, BE891512, BF026137, BE728699, BF132284, BE727942, BE262578, AV714339, BE897234, BE270790, BE386494, BE388079, AW161259, AV737768, AV714054, AA428176, BG104294, AA114853, AW327735, BE206811, AV762308, BE252245, BE730829, BE886666, AW966966, BE336882, AI557263, BF685382, BF102513, AA398171, BE748126, BE613563, BF683073, AA700878, BE385788, AI743584, AA101916, BE547370, BF528849, BE870266, BG248372, AV702432, BE270857, AI743198, BE270990, AV717679, AV708703, BE222997, AI066524, AW025366, AV715039, BF240874, AV764193, AA868378, BF114637, AI589860, AW007795, AI497772, AA399235, AW025357, BG164621, AW732971, AA425147, BE743276, BE259976, BF125638, BE677843, BE271114, AA428702, AI743131, AI191406, AA947862, BE388033, BE277311, BE390926, AW131703,

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HODGM46	854	105692 7	1 - 870	15 - 884	AW963219, BF924687, AW407007, AI125143, Z36862, BF817511, AA847341, AL044966, AA837771, AA582746, AA557945, AA610255, AA368329, AI732911, AA579082, F35684, AA522864, AI459879, BE049455, R67701, BF934303, AV732057, AA635150, AU147226, F26395, AW021674, AI633386, AI559720, AW028376, AV730440, BF950367, AI468993, F00937, AA745302, AA846046, AA640563, AV760155, AI251024, AW237903, AW089395, AW471494, AA354868, AA158549, AI915081, AI370470, AI445699, AI538404, AW275432, BE156328, AV714079, AF236698, AI444575, AA507990, AU159329, AA219166, AI308529, H47461, W69639, BE409402, AA610644, AA825954, BF724945, AW407679, AV649510, AA015948, BG059924, AI367551, BF815277, W45215, AI572680, AA351868, AA506734, AA368659, AI636734, BF914861, AA507291, AA569206, AI246386, AW979184, BF965924, BE207536, AW238016, R79396, AA935827, AA578245, BF772886, AL135490, AW196288, AI520984, AI828721, BE889093, AW029626, BE149998, AA661590, BG178582, W45416, AA460786, AI355246, AA155817, H29914, H68343, AI888050, AI921765, H79277,

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HODFR44	855	105699 0	1 - 728	15 - 742	AA897542, AI918140, BF975472, AI015702, AA586867, AI086135, AI858527, BF306114, BE300941, BE298569, AI090918, AI191755, BE328004, R59186, BF204020, AL524762, AW075596, AA291767, H07084, BF827044, BF737073, AA291766, H53735, AW206845, BF690570, BE019345, BF305732, AA909455, BE397797, AA921923, AI290282, AW954906, R38009, AI479903, T27152, BG222851, H53734, AW361311, AW627470, BF737063, BF761437, AL137516, AK025712, and AC022515.
HCHND12	856	105700 9	1 - 391	15 - 405	BF155196, BF155195, BG222449, AW371240, BF990033, W07572, BG013608, BF736389, AI907180, BF759690, BF742354, BF350339, AI671621, AW236992, AW410534, BF108852, AW057736, BF743441, BE297998, AI906106, AU140362, BF743462, AI907178, AI907188, BF984645, BF083392, AW371253, BF083378, BE615590, BE858290, BE698057, BF084125, BE091682, BF083386, AR034479, AR080259, I21124, AB008451, I21129, D16295, AR082744, AX023363, U71126, M11765, M12036, M11764, and AR086088.
HBHAC29	857	105715 7	1 - 802	15 - 816	BF944637, R17484, F11360, BF364648, BF957813, BF967711, BF090330, M29273, AC002132, M22357, M31811, I07878, J00756, M36702, I00254, M14871, X05301, M16800, X06554, M74787, and X98405.
HTPFW87	858	105717 0	1 - 2298	15 - 2312	AI889084, AW583218, AW583210, AW583686, AW583840, AW582954, BF883469, C06313, BE045909, BE045774, BE047051, BE045791, BF913619, BE045879, AW584003, BE042657, AW583474, AW862527, AI274789, BE045869, AW583430, BF197864, BE045900, AW087963, C06104, AW583020, AW583372, AW371544, AW582943, AW873924, BE045778, AW583323, AW873944, C05994, BE045797, AW874333, AW293311, AW873851, AW873852, AA845062, BE045910, AA845140, AA844754, AW873837, AA921397, AW014253, AI249954, AW583254, AA804606, AW873893, BE047058, AW874447, AW873952, AA405888, AW873926, AW338510, AI566621, AW874339, AW873937, BF755849, AW873888, AW242204, AW873810, AA835252, AA844759, AA405728, BE970129, C75365, T11187, AA845117, BE969807, AA845035, BE969825, AR012827, M54994, AR048597, A31800, M85201, S79774, AR012828, AF081673, M28402, AR022356, I41327, X16054, M15893, Z22803, AF072711, I38891, M94579, AF206618, X65944, AC002097, L14813, AC000395, M94580, AF206619, M69157, S70516, S70517, S40178, U52425, AC000394, and AR012831.
HISAF60	859	105721 2	1 - 3598	15 - 3612	AL524621, AL521404, AL524622, AL521403, AW978618, AL529722, BG256352, BE909801, BE783472, AW953057, W60630, W29012, AA149513, BF968833, BE783711, AA149644, AW965598, AW977554, BE834598, AA306190, AA404374, AA928795, AW026671, AA733045, AI131505, AW051295, AI139050, AI144018, BE855656, AW162934, AI089282, AI571763, AI351676, W60631, W76344, AW005213, AA146937, BF366791, AI146486, AW262622, AI557215, AA635131, AA780109, BF734995, W74364, AA978196, AA029134,

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HRABO80	860	105721 9	1 - 2303	15 - 2317	N73970, BF447084, AI755166, BF061416, AI920880, AI925857, AW072087, BE044048, BF754597, AI215589, AI354891, AA659919, AI271925, AI635236, AI248143, AA419156, R74346, AA419119, AA477132, AA326493, AA904372, AA477379, R74443, AI187966, BF941777, T33009, N91382, R72137, BF928844, Z45408, Z41119, AA666033, AA385063, BF448827, AA349368, BF196368, AW953123, BF941802, BF940219, R72086, AI932928, BF849745, BE707723, AA091149, BF090935, AI040362, AI264069, AA464975, AI346211, R55970, N99981, AA133535, AI276142, BE466055, W79505, AW206373, AA115760, R08200, AI679070, AI934793, BE936729, H44191, BE936715, AI953019, R55612, AI677914, T87783, AA465043, AC005237, AL050143, and AK025374.
HADDF30	861	105726 0	1 - 1524	15 - 1538	BF035536, BE466525, BG249577, AI923884, AA181023, AI420093, AA234461, AI580216, AI818510, AA186658, AI079954, AW150282, AA236533, AW851143, AA056421, AA132695, AI823407, BF768062, W39381, W38356, N79807, AI537664, AA913663, AI808322, AA913197, AI758115, AW974105, AA569156, AW609148, BF852368, AW605579, AW609171, R01697, BF852380, BF242772, BG033123, AI473441, R68282, AK025934, X54989, S69002, M21829, AJ001482, and S82592.
HDAAS58	862	105727 2	1 - 737	15 - 751	AL519465, AL529166, AA016096, AW499988, AI936646, AI905303, BF794653, AF254082, AF254083, AF254084, AF254085, AC005003, AF119256, AF242522, AL096880, and AB029397.

HSDZG15	863	105730 7	1 - 1279	15 - 1293	AI147040, BE798880, BE312862, BG112873, AI300527, BF983770, AW954404, BG178054, BG028619, BG036055, BG112301, AL526009, BF037981, BF968971, BF344098, BG026904, BG110999, AW262596, AI749037, BE745866, BF982694, BF036180, AW249503, BF805099, BE795630, BE257263, BG231995, AL526063, AI754474, AW957489, AI150184, AA740785, BG117900, AA037128, AI963804, BG024075, AA451894, AA745848, AA922673, BE719811, AI422459, BE899052, BE303058, AV722562, BG110401, BG054830, N36889, AI356068, AA037508, BF439421, AW084887, AI832951, AW118884, BG056311, AW614905, W70034, AA452082, BE873567, AI799103, AA635280, AA629610, AA045097, BE728450, AI885257, AW770259, BE793517, BE301334, AA047171, AI369408, AW340229, BF112113, AA994830, AA282268, BE539789, AI262401, N69029, BE674986, AI028014, BE208015, AA522833, AI798549, AI360652, AI369135, AW514771, AI400299, R66211, AW024945, H59917, AI982743, AI129681, BG023931, AA780100, AA026868, AI380625, N24421, AA862874, AA620584, AA568994, BE933489, T63497, BE810852, AA114064, AI865993, AA610253, AI027712, BE348870, AA622188, AI281344, AA581941, AI285021, BF035903, AI954518, R18087, AI393720, AA302917, BE899372, BG023781, AI492724, AW407782, AI350152, AA297718, H99631, AA114004, BF894564, AA024859, AI242981, AA600960, BE898463, T63572, AA026867, AI217817, AW264702, AA031944, AI092794, AA024942, AI961326, AI266633, Z41705, BF917245, AI521014, AA298499, H82753, H42029, AI720237, N46163, BE673180, AA297928, BF351017, AA530996, AI079633, AI830714, AA282269, AA057042, AA039801, BE873865, BG116527, AA045009, H28692, AI214663, R42980, AA297503, AI289504, BF891017, AA019035, AA810998, BE931598, AW998750, AA915959, BF830907, AW407164, AA032064, H41001, BE742141, BF854344, H84444, AA782807, BE513205, AI701301, AA947311, H59918, H83630, BE395723, BF854346, AA814257, AI285355, AA836524, BE872218, H84443, AW797132, AW797252, T24665, R29356, AW375991, BE090335, AW847201, BF037474, AI475393, AI220762, AW162194, BE084795, AL036705, AA614517, AI289310, AA037129, AL513723, AI499920, BE963810, AI918554, AW074374, AI690813, AI277008, AI955587, AL514493, AL134712, BF724911, AI270039, AI679550, AL046944, AX035212, AL137440, AK024622, AF002672, AL049314, X65873, AL133049, AF090900, AK026631, AF106657, AK024524, X66862, AF183393, AK024992, AL137530, A27171, AL133072, AF116631, AF069506, AF218023, AK026592, AF113019, AF119875, AK025424, AL137529, AL353956, AR081734, AY004290, AF267849, AF056191, I48978, AF013249, I32738, AF182215, AF260436, AF090943, AL049382, AL050172, AL137558, AF119894, AK025092, AF132730, E04257, U72621, AF143723, AL161964, AF287051, Z97214, AF116698, AK026542, AF116639, AF118070, AF038847, AF232009, AB007812, I09499, AL157431, AF115410, AL389957, AK025113, A57389, E12579, S53987, I89947, X63410, U92992, AK000476, A41575, AK024545, AF036268, AK000653, AF017437, AF113677, AF217966, AL080140, AF208850, AF107847, U90884, AF176651, AK027146,

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HPDVY52	864	105739 3	1 - 1377	15 - 1391	AU133623, BG261315, AU133968, AW959320, BE563107, BE737406, BE909112, BE736139, BE312849, BE311499, BF313356, BE542123, AL041822, BE273343, BE262136, AA459519, AW630567, BF038924, BF985233, BE873341, BF032290, W67855, BF314666, AA359598, AA433855, AA359774, AA344756, AW305152, H29096, AW167386, BF314925, AA443514, AW175941, BG012721, AU136231, AB011105, Z95636, and AL354836.
HHESW02	865	105747 8	1 - 1876	15 - 1890	AA551061, BG034640, BF001802, BF795036, AV764202, BG032289, BG259953, BF979110, BE408962, BE561363, AV760691, BG033633, BE348456, BF854361, AW402086, BF062592, BF691935, W46419, AI952866, AI718495, BF691364, AA970444, AI289901, AI095214, AI061277, AI347580, AI826942, AW511617, AA312289, BF217041, AA848029, BE560239, N68961, BF088217, W49781, BE246728, AA962522, W00660, W48762, BE729436, AA577013, AA354415, AA328452, AA989644, C01310, AI970883, AW513997, BF810694, AA355219, AW955293, AA361050, AA327850, AI264968, AA360699, BE246766, BE826080, AI087069, AW058063, AW856095, AA829953, AA358539, AA337078, BF433442, AI525090, AA319325, AW869241, AA381176, AI905583, BE711695, AU076504, AI688129, BE832438, AV651700, AV707405, AW955686, AV727550, AV709358, AF062075, AF118146, X77598, AR086332, and U38894.

HVVBW84	866	105756 1	1 - 2629	15 - 2643

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HSLJC80	868	105779 7	1 - 3111	15 - 3125	AW015571, BE062375, BE062376, BF115021, AI743133, BF345439, N46870, BE062349, AW469388, AI743132, AI655602, AI971441, BE466808, AI279521, BE677454, AW613424, AW361217, AI675397, AI925033, AI950217, AW753254, AI453144, AW629918, BF475424, AI623681, BF475334, BE939173, BE185689, AW361218, AI673826, AI359081, AI587561, BE677635, BE839901, AA448109, AA447610, AI084947, AV709700, AI634916, AI499501, AW580849, BF927416, BF847698, AA346223, AW796056, N47191, BG150486, AA557783, H26374, BF836746, AI904592, AI904600, AW748401, H27486, BF356963, AA255594, AA255432, BF995433, AI587580, AA249516, N47207, AW796055, AW580825, and AL122104.
HEOAD12	869	105784 2	1 - 1124	15 - 1138	BF307050, BE294659, BE295378, BE270183, BF306043, BF304968, BE299101, AA380349, W19499, BE832758, AW882273, AW263540, AA157229, AA225180, AW409843, AA151564, AA909334, AY009951, and AF116865.
HVVBT41	870	105788 0	1 - 1835	15 - 1849	AL520942, AL520941, AL524223, BF975546, BE790646, BE250104, BE741659, BE908458, BF346226, BG253282, AI992170, BE271697, BE891409, BG116444, BG032571, BE383072, AL534026, BE390699, BE257602, AL534027, AL134371, BE250877, BE790095, AA527588, BF316156, AI249023, BG170667, AL524222, BF313879, BE393833, AW007167, AI193019, AI435295, AW249684, AA315000, AI887652, AW160553, AW629814, BE831627, AA419118, AI878843, AI143093, BE795572, AA639468, AI762318, AI141843, BE305036, AW630286, AI093040, BE272301, AI355887, AI469829, BG059403, AW058047, BE891650, BF432375, AA769826, AA516117, AW954502, AW406598, AW245217, AI500434, BE907766, AI360848,

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HAZAE42	871	105791 5	1 - 877	15 - 891	BE618433, BE264353, BE313324, BE263795, BE383317, AI912683, BE618668, AA779820, AA991941, BF337731, BF965805, BG149406, BF057515, BE550120, BE793000, AI161191, N92707, AA926829, AA602406, AA911645, AI032667, BE503970, AA844970, AA576535, AA936479, AI094810, AI312822, AI365506, BE264410, AI143188, AA677341, AI091456, AI298331, AI273560, AI094902, AW470381, AI095731, AI277885, W79024, AI161190, AA729304, AI393476, AW949867, AU126753, AA948313, AI355600, AA861985, AA922331, AW160933, AA719310, AW162238, AI161149, AI041523, AI339212, AI014445, AI078542, AA987978, AI078619, AI350176, BE464539, AA935049, AA972852, AI817990, AI312673, W15310, AI935214, W39738, AI669550, H42852, AI873672, BF508021, BF437071, BE673460, AI873653, AI095798, AA991983, AA115875, AA594838, BE925134, AA534320, AW964391, AI240950, BF748841, AI092670, AA502784, AA580530, AI219314, BG152840, AW162538, AI432612, AI424202, T29324, AW381155, AI972574, BF350356, AW381156, AW381157, AW381154, AW381160, AW381158, AI673210, AA902771, AI865515, AW381367, AA340935, H42452, AI700003, AI141677, BF061619, W20323, AA297723, N84685, AW237917, BF847511, AW371365, AA594920, AW160737, AA364730, AA700832, AI740998, AW381361, AI971961, T19132, BE646310, BF058452, AI873154, BE299714, AA129778, AW381159, AA129681, AA371867, AW518312, N91971, W24300, BF941876, AW189399, BF933605, AA933767, AA628047, AA115874, AA911071, AL119457, AL119324, AL119399, AW877209, AI284131, AL134524, AL042544, AL043152, W95140, AL119443, AA745155, BF213477, AI961590, BF034010, AW804686, AW081670, BG176595, AW392670, M11433, X07437, X60367, M36809, M16459, M19257, X07438, AX030435,

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HPRBN60	872	105794 8	1 - 1292	15 - 1306	BF337618, BE255115, AW603700, BE896817, AW603677, BE672938, BE276149, BF574363, AW937845, BE252116, AW849081, BE561148, AW376536, AW849079, BE514132, AW384020, AW384003, AA043138, BF348905, BE560153, AL047014, AA152015, BE156263, AA147575, AW384016, AW848806, AA594982, AI825953, AW937773, AA446384, BE396902, AI422448, AW952134, AI160548, BE856434, AA211287, C03422, BE385571, AW384004, AW381024, AI572008, BE730503, H10239, F36732, AA528114, BE706949, BE156337, AA152022, Z33590, Z37011, AA040869, AI149862, N49013, BE156286, R84898, F12229, AA152219, R5182, R54122, H26826, R55910, Z24984, H13040, AW875889, AA318749, BF994321, Z25108, R13067, BE857659, BF477403, H26349, T66390, BF673084, BG010755, H22780, AA030050, C04576, AW516130, BF692959, F26947, AA429964, D57868, R20192, F29092, BE858947, F30389, D62688, C16326, AI096674, F09858, AI139180, AI201475, AW390825, Z28845, AA443358, AI139454, AW068999, R40498, AA037606, AI373942, T25134, AA156446, C16141, D57713, AA152096, F18878, AI032649, AA090702, W59970, Z28703, AW190966, AI720482, R56071, AI339673, R55825, AI368681, AA595134, C16104, BE706948, BF350778, AA993887, BF445806, AI147605, BE156340, H05938, AI200609, D57624, D57229, AA211332, D58131, D57532, AI582955, AI148481, BF978143, N48284, D56502, AA972352, AX013692, AF002282, AF039018, AF002280, AF002283, AF002281, and AJ249218.
HOVCZ68	873	105795 8	1 - 2115	15 - 2129	BG116678, BF243086, AA460133, AV662045, AV687215, AV724260, AV702152, AW450588, BF438173, AA236796, BF214971, AI653152, AA700186, AW963679, BE740138, AI692488, AW885555, AI744585, AW293745, AA693931, BF983866, AW304368, BF195586, AI214602, AA236842, BF360988, AA461488, AI341662, AI653052, AA701860, BE563637, AI420813, AI695758, AW296315, AI864175, AW957517, AI214697, AI022448, AI246345, AI038613, AI638793, AI631642, AI805779, AW019975, AW020821, AW068525, BG179259, BF223132, AI633543, AI655217, AW608280, AV693632, AW886582, AA374097, AI905366, AA450279, AW026664, R00254, AI002466, AA244063, AI391492, AA194965, AW885727, AI249184, AI811272, AW594616, AI420637, T55576, AA340655, T29589, AI168319, AA404500, AA384360, R01927, AA373240, BF360633, AV690607, AW883206, BE833779, AW068788, AV684001, AW367046, BF063831, AW884828, AI271355, R00364, BF588606, R01976, AW605113, AW883935, AA195600, AI263408, AW886854, AW885124, BE833700,

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H6EDF71	874	105797 9	1 - 1188		15 - 1202	AL520437, AU142804, AL529893, AL532350, BE746380, BE790665, BF338510, BF032858, BE879618, BF685188, BG111720, BF038502, BE876973, BE874884, BE514853, AL520436, AU128255, BE746932, BE271355, BE878839, BF037429, BG260711, BE929847, BE787588, BF085958, BE929836, BE394324, BE514701, BF034098, BE745477, BF032757, AI961479, BF034418, AW190446, AW580763, BF856484, BE929826, BF085962, AW794866, AI923277, BF036383, BE271711, BF367936, BG163405, BF036043, BF085965, AI884400, AW129387, AW470030, BF085961, BF367954, BF838606, BF033708, BF155010, BE929780, BF893428, AI432621, BF112058, AI701980, AA478755, AA418709, BG003366, W93910, AI635480, W93648, BE929849, BF792654, BF094272, AI491762, AA418855, AA918056, BF792592, AI270167, BF874313, AA938271, AA558268, AI707674, AI338213, AW803891, AW178327, AI613026, AA418701, BE880059, AA471190, AA455447, AI082024, AI476785, BF834237, AI280720, AI275229, AW817309, AI708271, AI742309, AA588253, AI167998, AI857345, AA455448, BF315654, BF089052, BF089047, BF831778, AA834685, BE825546, AA669129, AW090377, AI445021, AI016116, AW749412, AW662036, AA773707, AA773711, AI474588, BE094468, R31499, X69398, Z25521, AB012693, Z25524, D87659, and AF017437.
HCOOF60	875	105800 1	1 - 1061		15 - 1075	AL526177, BE253593, AL532360, BE799956, AL527147, BE798900, BE731866, AL526332, BE791805, BF311672, BE887602, BE887139, BE906158, BG032280, BE274611, BE790863, BE747125, BE793231, BG033981, BE794214, BG105698, BE795680, BE883369, BE314315, BE888057, BG030175, BF037460, BE269400, BE798571, BF794891, BE382478, BE889569, BF205550, AL524393, BG165274, BE612547, BF315624, BG122586, BE262243, BG036814, BF968944, BE729909, BE264533, BE887730, BE252503, BE267719, AI678077, BE728326, BE292738, AI884863, BE407519, BE885803, BF206103, BE278817, BG177708, BE880576, BF317101, BE513876, BE207288, BE793544, BE794750, AI869333, AI884942, BE621419, AL524942, BF689214, BE562063, BE268715, BE907860, AL532359, AI859296, AL524941, BF317484, AA829937, AW250313, BF308280, AW300936, BE782513, AW665495, BE542407, AI571293, BE730436, BF792913, BG179097, BF969617, AW674596, AW273060, BG250687, BF684404, BF205595, BF970179, BG056166, BE312868, BE891748, BF971047, BE261776, BG116513, AW615753, AW248281, BG167242, BF035772, AA582906, BE297066, AW615587, BE392439, BF203659, BF128828, BE896101, BE884376, AA928110, BE781600, BE408171, BE780535, BG122278, BG031477, AA283711, AI589898, BF038700,

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HVVBH81	876	1058059	1 - 3719	15 - 3733	AL518676, AL518677, AL531304, AU141086, AU118214, AI373164, AU133052, BE270816, AU135714, AU120690, AL534584, AW850569, BG116153, BF980876, AU131160, AU124508, AU126480, AL042922, AL531305, BG257200, BE882992, AU133074, AU136504, AV728061, AV726133, BG258667, BG181161, BE893908, BG252256, BF983502, AV757242, BG260910, BE891169, AI831087, BF983539, BG250922, AU139474, BG251940, BE542434, BG250000, BG027005, AU127917, BG032069, BE897086, AU130237, BE891054, BE897202, AW105385, AU127922, BE087523, BF795690, BF797994, BE294893, BE514490, AV712214, BF791761, BG108276, BE888881, AU123253, BF672104, BE904546, AU122800, BE268292, AW991449, BE874925, BG114816, AU120326, AV715180, BE886051, BF982166, BE879865, BE304478, AW604316, BE268335, AW377087, BF681298, BF304610, BF690679, BE620261, AW953561, BE871794, BE514422, BF696991, BG120797, BF686663, BE784110, BF245659,

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HSPTJ51	877	1058172	1 - 3338	15 - 3352	AU117722, AU117639, AU125461, BG257346, AU125320, BG259614, AL041666, AU134919, BE887285, BF340359, BE270501, BF971008, AU125165, AA593983, BG254919, BG119566, BF791982, BG027717, BG117307, AU129485, AU128253, BF673138, BE410718, AW574556, AW500522, BG177695, BE797876, AL040633, BE770449, BE770431, BE736836, AI742708, BF978550, AI767520, AI742404, BE504225, BF111089, BE910115, AI681786, AU127139, BE545374, BF516249, AI908291, AU152319, BF056960, AW055010, AA126621, BE781576, AI333650, BE467323, AU144420, BF575212, AW996837, AA702137, AA206018, AA701911, AA126494, BE672572, BE737023, BF185788, BE789485, BF978567, AW602159, BF736100, BF820317, AI803067, N36960, AI088039, AL046313, BF132901, BF735867, BE707249, BF477588, AA024996, BF216802, AI912291, AI394065, AI805781, AA887081, AW029557, BF791743, BE217919, BF212498, BF736081, AI300960, AI376119, AA868717, AA121662, BF898020, AA526920, AI435569, AI075870, AA450145, AI436181, AA889549, AA548268, AW674271, AI636640, W58617, W58616, BF221495, AI686830, AW236479, BF244753, BE502359, AA255800, AI417171, AI916972, BE677826, BF035948, BF876879, BE694966, AA835638, AA447229, AA926978, AI208286, R95825, AA133188, AA609764, BF735994, AA558595, AA663764, R95776, T31467, BF475395, BF571998, AW401693, AA450088, BF736109, R83440, H54350, BF759908, AA972925, AW268985, AL041665, AW674569, BF029677, T06718, AA847564, AW996718, R19916, R67673, AI701761, BF977723, AA641688, AI707476, AW008306, AI749513, BE695062, AA332616, AI248393, BG260186, H53515, AA872693, H21971, AA732501, AI936949, AI093590, AA987830, AV654826, BF210714, AA872122, AA336781, AI379404, BF575890, AL039844, BF571552, H54140, AA025231, AA135593, N46277, N44961, R45136, AA361881, BF063891, Z43024, AA206243, AI570851, AA334590, BE148526, W60520, BF897472, AW674396, AA025992, AA885215, T19008, AW366176, BF910491, BF224308, BE731752, AW263468, AA171577, BE835030, BE080810, AW470374, R50245, Z39126, R66073, H53885, BF812753, AW361717, BF741506, W56208, BE409150, AI572255, AI123071, AA328659, AI003177, AA311578, R55217, R55214, AA630696, AI967952, AI560080, AI691108, AW998198, AA133216, AA135680, D19755, AA027062, AU127146, R34179, AI537428, BF821498, BF931991, AA101379, AA024952, T10703, AW129393, W21413, BE042729, AA235267, N93581,

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HOPKC80	878	1058174	1 - 1490	15 - 1504	AI148864, BE673121, AW080794, BF036486, AW170514, AW006431, AI188759, AI832265, AW001480, AW471370, BF439239, AW168034, AW129649, AA769641, AW172714, BE867358, BG251850, BF516562, BE869511, AI598083, BE512714, BG250319, BG248190, BE740431, AA552439, AI587171, AI151456, AA151778, BF229956, AI684150, BE612973, AI339143, BE962486, AA621571, AI221080, AI279608, AW818139, BE868659, AI347951, AA512993, AI471439, AW243807, AA627704, AA973368, AI346482, AW952945, AI050852, BE742221, AA194025, AA410196, AI262321, BF333880, BF034695, AI829191, AA808606, AI344709, AA832492, AI984534, AA149786, AI189417, AI446633, BG251275, BG248564, BE280342, AI828290, AA580361, AI206376, AI924092, T98835, AW273245, AI300760, BE617957, AI271915, BF037659, AA133687, AI074095, AA659629, AW450853, W07258, BE872881, BE617516, BE613433, AI435798, AA976596, AA603691, AW292998, AI950654, AA875879, AI244806, N29871, AA948384, AA946812, AA862576, AI804146, AI982855, AA812251, N79741, AA888824, AI832503, AA133726, AA577501, AA297383, AI220826, BF824752, AA297386, BE963095, AA535896, AW571512, H95187, AA287234, W79526, AW190388, AA631290, AA908173, AA872504, R47933, AA496489, AI301669, AA427910, AA297379, R69472, AA284504, AW004671, AA746077, AA989485, T98916, BE074801, AA487702, AA297484, AA297153, AA464649, AA292774, AW170481, AI963760, W79558, AA394263, AI986058, AA903542, U46323, AW079683, AA487488, T98961, AI342966, AI982682, BF764771, AA287210, BF766656, BF749186, AA297527, AW845358, AA861541, AA297453, AA557937, AA133595, AA464548, AA553875, AW844388, AA486446, AI275661, AI719497, AA496440, AA481372, AI673125, AA565649, AA341051, C21003, BF801101, AA428283, BF512723, BE541671, BF761672, AA298491, AA421514, AI749779, AW007555, AA411012, AI273816, N57294, AW997921, BF765464, BF854746, AA133686, AA411355, AW841964, AW578145, BF743003, T53668, AJ011497, AX013131, AC003688, AF087825, AK026651, AP001726, AL137550, AB052191, I89947, AF069506, AL137480, I48978, AF159615, A70386, AF102578, A77033, A77035, A08910, A08909, AB047904, AK026408, AF130100, AF116631, AL050024, AF232009, X83544, AL049347, AL137459, AF177401, AF287051, AR038854, AF026816, AK026744, AK027164, A08913, AF116646, AX020124, U73682, AK025435, AF130099, AL110280, AX026824, AX026823, A58524, A58523, AL122110, AF130055, AF183393, Y14314, AL117435, AK026462, AK000614, AF116688, AK027096, AL080159, AL389935, AL035458, AL122050, AF225424, AF124728, AB047631, U80742, AL137548, Z97214, AL137539, AF087943, AK027173, AL117457, AR068753, AL137533, AR034821, AF130089, AK026534, AF113019, A07588, S36676, S83440, E02221, AK026464, X82434, Y16645, AF116609, AX019230, AL133113, U35846, AL389982, AF119899, Z82022, AL157431, I25049, AL353940, AF185576, AL080126,

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HPCTP25	880	1058287	1 - 2729	15 - 2743	AU119788, AL527530, AU133453, AL041710, BG254929, AU135809, AU125732, AU133490, BG167820, BF980151, AU117705, AU135011, BG177432, AV728081, BF340124, AU142970, BE904257, AI683356, AI718805, AU129705, BG253192, AU136035, BE879896, BF310336, BE876423, BF793406, BE897590, BE313976, AA523878, BG120959, BF576338, AL041709, BE644637, AV653774, BE550211, BF681197, AI627660, AI174799, AA599054, AI022796, AV655073, BE545921, AU150476, BE886184, BF733143, BF979534, AL041354, AU151780, BE669848, AU146044, BE731723, AU160149, AW992165, AW090741, BE467630, AI929634, AW675271, AU144468, AU128178, BF000640, BE465418, AI373094, AI754961, AW206048, AA283346, AI912769, AA305319, AI334432, AI950173, AA010981, AI525702, AI634657, AI096502, AA136982, AI041563, AU156300, AI810295, AW024236, AI080215, W03757, W07811, AI263861, AI266121, AW139644, AA137108, AA010649, AA280680, AI431611, BE178646, AI422044, W16729, AI278157, AI253137, AI276543, N79441, AA722649, AA506701, AI379878, W02153, AA773825, AA113143, AI985396, BF244725, W32487, BE873388, AI954599, AI247192, AV650176, AI400581, AU149335, AA996276, T29823, AW377743, AI300404, AA312038, AA283267, AA456000, AI222171, AV687488, AV684077, AA743477, R99135, AW207341, AA113060, AW244164, AI018287, AW361239, T40919, AW204287, AI275171, AW135486, AA715236, AI193809, AI085593, AU155764, AI810430, AI263461, AW377722, AI378460, AA640240, H48435, BE243042, AA355196, AW998778, AA371081, F11184, AW370196, N90128, AW998780, AA348183, AI436088, C02060, AW377746, R46816, AW998880, BE178988, BE929721, AW900019, BE178955, BE048812, T96654, AW900068, AW900015, BE005744, BE178985, BE178946, AI954168, W31460, AI913558, AA626107, T39968, AI018721, AW892371, AI872850, BF435456, AW998786, BG013386, BE931863, AA233327, BE836418, BE005607, AI095067, AW294149, AW998883, AA092224, BE935313, T96769, BE710361, W31779, N79240, BE817034, D79934, AW377502, BE935425, AW673040, BE935388, BE935582, BF911102, AA233328, BE935510, AI689307, AI866324, BE180359, AW337837, AW512945, AW779517, AI400547, BF093371, BF095040, BF094192, BF672187, BE707372, AW992130, BE242425, BE940388, BF965040, BE172986, BF887652, BG118789, AW627801, AF172093, U34252, U50203, X75425, AF170918, AF170919, and AA650519.
HODKM52	881	1058305	1 - 1396	15 - 1410	BE675862, AW170492, AW615410, AI921484, AW778984, AI087865, BE504781, BE501303, AW664137, AI804599, AI761680, AW438623, AA564397, BG009559, AU148656, AU155012, AI473829, AI361784, AW082773, BF836752, AI804809, AW854134, AI126258, AW438975, AA053738, AI885468, AA219424, AA053218, R81717, AW951339, R81716, AA639617, R22820, R21206, BE246692, R81678, AW291929, AA829675, BG015493, H53703, AI336922, H53702, AW262475, R81677, AA496643, H43599, BF851318, BF886577, AA298439,

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HCONB89	882	1058316	1 - 2428	15 - 2442	AU133486, AL531664, AL531663, AU133130, AU139013, AU141515, AU137644, AU137574, AU120996, AU136221, AV733714, AV715795, BG169581, AU127912, AV718227, BE783774, AU138115, AU137614, AU138855, BF339894, BG260734, BE891527, BG110089, BF966675, BG171662, BG170082, BE782211, AU135005, AL039207, AU134723, BE879634, BG165755, BE895932, BG167846, BF793180, AV726888, BE890841, BG169975, BF363417, AL048640, AU135846, BG105608, BF571125, AA527272, AW237266, BG115365, BE893637, BF978315, BG171140, AW237326, BF691407, AW027071, BF668607, AL037862, BF363427, BE075327, BF363421, BF669850, BF212851, AV713984, BF363418, BF363425, BF363422, BF691697, AI934569, BF966483, BF031324, BE564631, BG026587, AW089586, BF363423, AV730222, BE893556, BE968638, BF373083, BF363419, BF978056, AA220921, BF363414, BE567768, BF698264, BF589151, BF363412, AV730226, AA664155, AW303541, BF381806, BF701422, AA209458, AA220916, AU137868, AU154130, BF363426, AA476548, BF382463, BE968837, BE568406, BG259559, BF373099, BF248406, BG166999, BF363408, AW590404, BF351702, BF208023, AU146912, AW264406, BF373117, C18982, BF572761, BF678349, BF363411, BF363416, BF383061, BF570658, AA220924, AI422877, BF673996, BE895525, BF694282, AU153701, BF571324, AW949610, AW475045, AA218949, AA099110, BF243849, AI439160, BF363409, BF695133, AU130705, AU154514, AW338521, BF205387, T57743, AU152609, AV703087, BF693329, BF691506, N42342, BE644934, AW263656, AU157350, BF373107, AW182386, BF082041, AI096608, BF196144, BF673006, BE175494, AI151511, AI685369, BF373100, BF692184, BE176777, AA890477, BF373109, BF029724, BE167238, N20605, AI825979, AU157245, C05885, AU132632, AA219758, BF571942, AI909012, BF352283, AA604911, N22746, BF373119, AI951164, BF373102, BE972577, BF436503, AI343970, AV725554, AW592381, BF373074, AI492929, AA219755, BG000230, BF373112, H80206, BG007213, AA542825, C04448, W44600, BF571043, AW473983, BF373076, W70075, AI089376, T33636, AI571938, BF373118, N33364, AA534919, AA564819, AI096622, AI539176, BF373115, BF132073, BF373077, AI304768, AI680346, AA147100, AW167191, AA559033, AI346610, BG000231, AW967267, BE166365, AU150301, BF332576, AI281046, C05238, AW366325, BF218529, AI359688, AI356805, AW191042, AU155760, AW241669, AW237334, AA216693, AI809362, BF572538, BF373090, AI040424, AA209363, BF433307, AI884545, AA243961, AV716729, BF373116, AA169399, AA961204, BF373114, AU138282, AW630761, BF363413, BE168800, BE567852, AI695195, AI935419, BE168801, AL037863, AI311119, AL538044, AK025732, U47674, U70063, AF157500, AF220175, AB020867, AB020868, AF220173, AF220172, AX047063, AX033851, A84916, AK025211, AR070327, A62298, AR018138, AB028859, AJ132110,

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HUKEJ46	889	105853 9	1 - 1602	15 - 1616	AW874247, AW874371, AA910550, BF434085, AA534811, AA983386, AU126641, BF757483, AI955581, BF755328, AI672883, AI586988, AA057145, T25016, AA974281, BF758100, AA887124, BF757704, AF081512, AL117348, AF081513, U81523, D83921, AJ000082, AJ000083, AF081507, AF081511, AF081504, AF081508, AF081506, AF081505, AF081510, and AF081509.
HDTFT47	890	105858 8	1 - 795	15 - 809	AI583173, AI473685, AI990953, AI680405, AW575343, AW951299, AI686920, AI279118, AI866763, AW273252, AW262003, AW083564, AW152078, BG236446, AA552648, BE876810, AV714299, AA903579, AA410919, BG230769, AW148673, AW575939, AV752077, AW392557, AI687988, BG235997, AA595644, AW406669, AW578510, AA576706, AI275169, AW950371, AI817519, AI627978, AW118007, AW170604, AI798555, AI287852, AI250410, AV733177, BF087348, AW082656, BF663857, AI439674, BG058620, AI956001, AW263617, AI381595, AI362475, AA224990, AI356365, AA961950, AI735409, AI733503, AA225038, AI829822, AI308923, AI004331, AI476133, AA576297, BG012427, AW406548, AW193241, BF128864, AI829843, BG176760, AI242627, AI537866, AI281599, BF737111, AI792212, AI572936, AI708910, AA458472, T28167, BG012426, BF843204, AI675832, AA871998, AA669055, BF924288, F26079, AW571413, BF844800, AI758642, AA954889, AI275200, AW189214, AI432217, AW169616, AW380025, AA442984, AA258595, AW795512, AA258624, AW407966, AW795511, AW391063, BG009113, BG149250, AW872490, BF737114, AW952175, BG012425, AA406361, AA406417,

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HSSFS71	891	1058596	1 - 500	15 - 514	BF309366, BE908964, BG030274, BF529310, BE906932, AL524107, BE899502, BF207110, AL524321, BF206454, BF314425, BE410188, BE387063, AL519836, AL515731, AW163247, BE207049, BE298771, BE313315, BF032587, AW163135, BF036749, AW966563, BE612399, AW966557, AW583813, BE386128, BF219994, BE910307, BE383711, BF701280, BE612672, AW583752, BE729998, BE385039, BE383977, C17895, BG030571, BE615838, BF037714, BE741510, AW247611, AI878890, BF343434, BE271979, AA459193, BE736474, BE384598, BE737190, BF348206, AI815391, AA136110, AA481716, BE391879, AI751884, BG254389, BE789300, T33372, BE744046, BF315514, M78227, AW002542, AA397605, BF308141, AL038945, AA045714, BE395307, AL519835, H38469, H15232, T09997, AL524106, BF305982, T08625, BE909139, H18019, AW160802, AW249946, T34483, AI932344, T78291, BF339698, AA121099, H11912, H42617, AL524320, R90886, R85161, BF436417, F05361, AL536167, BE909379, BF847828, AI871752, BE669457, AI420118, BF448303, BE670936, AI887806, AI690297, C05027, AI307794, BE613278, R13703, R53244, AW732277, R54155, AW002869, R00683, AA485591, AA905687, BE620961, AW246212, R35117, BF772134, U36190, D42123, and D17512.
HSDJH63	892	1058612	1 - 1500	15 - 1514	AA741118, AW451491, AA252360, AW975618, AV718489, AW966053, AW978634, AW960553, D80253, D80188, AV722801, AV699447, D51423, AV724520, AW966531, AW966534, D58283, AV719557, D59859, AV699550, D59889, D80166, AW978661, D59619, D80210, D51799, D80240, AV719822, AW949645, AV718692, AW973307, AV719324, AW965177, AV720211, AV720731, AV723927, D80212, AW949656, D80227, D57483, AW949642, D80366, D80195, AW975621, AW959570, D80219, D81030, AV718440, D80391,

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HAHGD24	893	1058622	1 - 1314	15 - 1328	AI935823, AW664925, AI805549, BE677483, BF109878, AW262864, AW300962, AW008229, AW167386, BF197239, AI857550, BF341458, AW572485, AW439371, AI805365, BE221220, AI554583, AI953162, BF032290, AW089913, AW952401, AI638571, AW675600, AW104806, AA434376, AI467884, AI673775, AI740642, AU149181, BG178196, AI680267, AI936312, AA430337, AI623857, AI184933, AI017079, AA664357, AI682694, W72320, AU154874, AA459289, AA428381, AI453624, AW167276, BE856447, AI026737, AI682932, BE220921, AA305589, W67797, AW139650, AW629990, AI536942, W67855, AI270292, AW175941, AI860034, AV655526, AW084313, AI364650, AI798284, AI886607, H28992, BE736139, AA430385, AW105495, AW080666, AI955970, AW016122, AA746169, AW576533, AI434880, AW262874, BG058348, AA427358, AI915650, BE873341, BG012721, AI339382, AI368547, BE909112, BG261315, H02204, R70310, BE046185, AI472500, AA614143, AW305152, BG056333, BE542123, AW613789, D29029, BE563107, AI914675, BF038706, AU133623, BE093293, AW975037, AW975965, AW971403, AW976024, AW975031, AW969791, Z99396, AW972845, BE737406, AW972292, AW975628, AW979204, AW979127, AW971975, AW974801, AW975002, AW969680, AW975032, AW976023, AW979002, AW877209, AW969643, AL119324, AW975952, AW969673, AL119457, AW974786, AW973717, AW975966, AW975971, AW975154, AW971326, AW971968, AW979238, AW975632, AW975025, AW973213, AW975981, AW975959, AW979176, AW975105, AW972680, AW975954, AW972296, AW971375, AW979106, AW979090, AW971378, AW972721, AW969885, AW973209, AW979098, AW973219, AW975930, AW975942, AW974823, AW970942, AW975027, AW974975, AW975254, AW979134, AW976982, AW975020, AW973750, AW969839, AW970936, AW971732, AW975019, AW971404, AW974785, AW970969, D45760, AW979169, AW974998, AW974964, AW970889, AW974658, AW974806, AW979294, AW969816, AW975876, AW969852, AW972684, AW976031, AW976511, AW979054, AW975028, AW975157, AW975022, AW972377, AW969637, AW970010, AW973812, AW972849, AW979076, AW976000, AW975692, AW972817, AW974802, AW973810, AW975585, AW975015, AW975649, AW974338, AL119399, AW979037, AW972867, AW973270, AW970113, AW972154, AW972884, AW973202, AW972695, AW973805, AW972719, AW976515, AW975976, AW979165, AW976510, AW971387, AW975975, AW973770, AW969884, AW972943, AW969759, AW979083, BF592735, AW970587, AW973650, AW979175, AW973986, AW979064, AW975938, AW975016, AW975138, AW975968, AW970921, AW969766, AW979116, AW975244, AW972806, AW973987, AW975910, AW975943, AW972689,

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HTAEV85	894	105872 3	1 - 3249	15 - 3263	BE743925, BE743575, BE378832, BE562723, BE294053, BE394456, BF795479, BE388681, BF037525, AW607813, BE855547, BG235939, BE742475, BE378447, BE395372, BE379289, BE395340, AA399317, BE394992, BE350066, AW269658, BF033725, AV721020, BG057713, BE855481, BF941362, AW071828, AI672782, AI589288, AA635623, AI952009, AI553739, BF874688, AI524197, AI333826, AI809288, AI051257, AI423403, AW444587, AW404848, BE670760, AA814571, AI221743, AA291537, R58899, AI829285, AI418846, AA806818, BF953369, AW576501, AA084339, AA420642, AI953273, AA378569, AI356753, AI953017, T33610, AA350904, AA912707, R55664, AI024694, R90802, AA323883, AI372418, T33644, AI797874, H17555, AI339970, BE394689, AI985914, AA894697, AI350316, W22337, T16022, BE392352, AW085823, R88491, AA910596, AA815454, T33681, AA628149, H17451, R90803, AI627590, R55665, AI372419, AA326015, AA813547, AI356317, AA021487, BF920676, AA776204, AA953514, AI391714, AI887011, AA678937, BG152477, AA296883, T30918, T30945, AI372421, AI372420, T33218, T31286, AA350810, AA323752, T33219, T30906, AA782949, AI655347, AA493844, AA341681, T03448, AI024341, AI014310, AA398230, R43882, AI886803, R66432, AA805970, BF921111, AW518669, AL041008, Z42334, R52818, AA080905, AI475040, R19528, AA404699, AI815069, AA324503, BF929916, Z38828, T59381, T33680, AI919449, BF830756, AA325142, H50012, AA341603, BF947931, F01860, M78925, AA323277, BF924567, H15894, BF919142, AI015469, BF881778, AA323721, BF919066, BF918558, BF808617, BF847205, BE673584, AW378345, BF803820, AI740981, Z42668, AI918282, AA019030, BF089820, BE698940, Z42460, AA021656, R52857, AA988658, AI025132, BG150860, AA019306, AW952342, T06612, AI525653, D87465, and AC022392.
HPMME44	895	105892 8	1 - 1505	15 - 1519	BE779992, BG177813, BF765915, BE541570, AW971745, AV645385, AV681500, AV645390, AV645392, AV645393, AV681492, AV681509, AV681529, AV681512, AV681526, AV645336, AV645317, AV681507, AV681465, AV681525, AV681495, AV681505, AV681502, AV681504, AV681486, AV681483, AV681464, AV681462, AV681487, AV681506, AV681523, AV681519, AV681497, AV681471, AV681527, AV645404, AV645401, AV645332, AV645383, AV645377, AV645379, AV645389, AV645369, AV645380, AV645321, AV681501, AV645400, AV645353, AV681458, AV645334, AV681510, AV681528, AV681474, AV681514, AV645339, AV681477, AV681491, AV681472, AV681475, AV645358, AV681488, AV681513, BE613349, BE612945, BE622828, BE613070, BE614307, BE613136, BE614237, BE622931, BE621911, BE614230, BE622925, BE618811, BE622868, BE620742, AV681461, BE614451, AV645350, AV681531, BE620756, AV645344, AV681468, Z99396, AW804686, AW392670, AW861944, BE695785, U46346,

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HTGFW12	898	1059006	1 - 2883	15 - 2897		AU140605, BF568181, BE884933, AI092272, BF114739, BE763779, BF840656, AI831722, BE304459, BG177103, AI147872, AA458667, BF674494, AV655809, AA256169, AI539402, BF697242, AI096500, AA442352, BF381825, AA428236, BE090126, AA151500, BF984173, BF840055, AA282385, BE090067, BF207751, BF529849, BF680924, AI140631, BE675175, AW390677, AW630204, AW072144, BE676031, AI433648, AA256227, AI341574, BE883788, AI610253, D81337, AI351995, AI434401, AA151555, BF216419, AW968473, AA770647, BE041624, H25509, AI027709, AW391345, AA297413, AI014823, BF811216, C15868, AA199618, AA418026, AA707711, AA076687, AW148510, AA078218, BF766312, AA621085, T93906, AA297224, BF766317, AI274433, BG011908, AI225016, AA411808, BE675201, AA206606, T93863, BF808379, AV752818, AI079394, AA459495, AW901133, AA434457, BE814536, AA782931, AI571067, AI800888, BF889065, AW882790, AA973520, AA740470, AI084443, BE814559, BF096206, AA089762, AI393589, AA917605, AA403077, AW374569, BF351151, AA207235, BE703954, BE718099, BE701207, AI761298, BE703998, BF800704, BF327250, BF766235, AI686835, BE703901, AA776963, AV735938, AA908680, BF847468, BF847463, BE828695, AA437275, BF845178, AA078169, AA282042, BG231225, H86310, AA205333, BE814371, BE147951, AI039733, AI583024, AI192131, AW401404, AI039000, AW151695, AA077054, AW883686, BE701170, AI090090, BE701175, BF829714, AA887635, AI375569, BF364757, BF756621, AI401537, AI520978, BE703999, BE891094, BE932845, AW976626, BF796278, AA161026, BE938866, AW361568, AA013439, AA769612, BE815326, BF822013, AI267887, BE815369, BE163029, BE698283, AA911366, AW058057, AI268076, AU120696, U13696, U14658, U28724, AC005995, AB017004, D38435, D38436, U38964, AB017007, AB017006, AB017005, D38437, AC006014, AC005488, AC005071, AC004867, AC005098, AC004166, AC006480, U38979, AC004878, AC018720, AC007000, U38980, D38438, D38440, AC005088, D38439, AC004980, AF030453, AR062818, and AR062817.
HOFMT75	899	1059050	1 - 1485	15 - 1499		BE615276, BF340866, BE909308, BE876727, BE878185, BE787546, BF793219, BF025894, BF346288, BF027348, BE907259, BG171700, BE870259, BE793972, AI869324, BG251535, BE905686, BF344721, BE797588, BE539065, BF526208, BF724433, BG260401, BF346215, BE906884, AW068684, BE890682, BE909949, BG178360, N20475, BE392521, BF312304, BE867221, BF026564, AW179034, BE276165, BE276172, BE277237, BE789580, BE062186, BF087437, BF880137, BF311180, AW732268, BF378665, AW884175, BE906327, BE908992, R88501, BG168264, AL045190, AW601604, BF343463, BF569508, AW402407, BF317451,

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HARNB17	900	1059085	1 - 1773	15 - 1787	AI652284, AV699731, AW772193, BE567359, AA948087, AW772160, AW779951, BF061442, AW275997, AW772178, BE501251, AI741087, AW468826, AW504488, BF694626, AA588762, AI650484, BE042660, AW021276, AI453254, AA983512, AV681483, AV681519, AV681502, AV681487, AV681526, AV681512, AV681462, AV681505, AV681465, AV681464, AV645390, AV645385, AV681529, AV681486, AV681525, AV681497, AV645393, AV681523, AV681495, AV681506, AV681509, AV645317, AV645336, AV681504, AI337944, W61302, AV681500, AV645392, AV681471, T93088, AV681507, AI590203, AV681513, AV681492, AI215418, R61302, AI214698, AI380725, AV645379, D62123, AV645377, AV645339, AV645353, AV645383, AV681528, AV681458, AV681477, BE892916, H15528, AV681474, AV681491, AV645389, AV681472, AV645332, H10464, AV681514, AW779966, AV681510, AV645321, AV645400, AV681527, AV645401, AV681501, AV645369, AV645404, AV645380, T93181, AV681475, AV645334, N42857, AI084484, BF185904, N40724, W65366, AV645358, AV681488, N35340, N21245, N27958, R44952, AA327161, N34449, C02871, AW971745, T93148, BF243907, H06275, H16402, AV681461, AA598831, BE614237, R81480, AA333901, BE613349, BE612945, BE622828, BE613070, BE614307, BE613136, BE622931, BE621911, BE614230, BE622925, BE618811, BE622868, BE929621, BE620742, BE614451, AV645350, BF034128, AL514919, AL514357, AL514691, AL514627, H15585, AV645344, AL119457, AL513597, AL513693, AL514087, AL513977, AL514791, AL513907, AL514473, BE620756, AL513553, AL515413, AL513865, AL119399, AL513643, AV681531, AL514543, AL514155, AL513999, AL514063, AL514085, AL513631, AL513755, AL514721, AL514793, BE889755, AL514015, AL513779, AL042544, AL513687, AL515191, AL513817, AL514579, AW877209, BE966443, BE966577, AL513723, AL514823, AL514409, AL514929, AL513951, AI453322, AL514093, AL513911, AL514867, BE966547, BG179099, AL514493, AL514101, BE964994, AI520785, AL513979, AL514657, AI282355, AI564719, AW117882, AL513781, AL514935, AL515235, AW167448, AL042382, AI862139, BG167249, BE966388, BF970652, AL515195, AI366900, AL514457, AL513789, BE963909, AI889376, AL514097, AL513901, AL514219, AL514359, AL513985, AL079794, AI433157, BG179586, AV723772, AL514541, BE886686, AL514025, AL119511, BE962898, AL514983, AV681468, AA449768, AL513809, BE965891, AL514871, AI567351, AL514511,

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HPDRG65	901	1059102	1 - 423	15 - 437	AA297666, AV738383, AI017251, AI634187, AW974932, AW865946, AA502991, AA904211, BF681619, AV754716, AI244157, AI733856, AA630535, AI360558, R98218, AW405054, AI866971, AL042667, AL042670, AA458452, AA599080, AI446336, AI354333, BG152753, AA126005, BF772474, BF920612, AA669155, AI744830, BG222875, AW237905, AI431513, AA916430, AI280266, AI224415, AW969831, AL120282, AA550850, AA491955, AW273218,

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HAOSG15	902	1059145	1 - 2347	15 - 2361	AL520294, AL520293, AL525605, AL525831, AL525657, AU142378, AL524202, AU125658, AU125479, AU142048, AU124605, AU124758, BE250191, AU120354, AU143095, AU125212, AU120571, AU139612, AL524201, AU126238, AU139771, AI743097, AI086613, BG260449, BF740271, AU128215, BF111197, BF980252, AV701502, BG105442, BE867406, BE902609, BG109660, AW157037, AU136161, BE315176, BE731472, BE733514, BE270798, BG260990, BG037127, BG108590, BF975674, BG248187, BE269977, AI953000, BE781222, AU127362, BF204084, BF182811, BE327571, AI857481, BE742430, AU137283, AU122002, AU129815, AU127383, BF034793, AU135672, BE792945, AW071902, BF035732, AU133928, BE385418, AW972560, AU123809, BE271930, BG119354, AI452672, BG029305, BF033999, BE279117, BG114912, AU129194, AU136947, AU134942, BE383170, BE899622, BG166228, BE514343, AL036995, AA682415, AU126321, W06868, AI188701, BE264763, BE779624, AW272821, AU129665, AI805543, BF574585, AV729243, AU135907, BE789311, AU136278, AI337897, BE888339, AW163004, BF979548, BF684456, AI628335, BG254564, BG120870, AA625230, AI189673, BF686661, AI609089, BF690693, AA724370, BE328085, BE350270, AW409571, BE257617, AA557357, AU128498, BE270967, BE880385, BF979251, AV707464, BG253950, BF434406, BE858534, AV705242, AA188177, AI240245, BF694548, AW055294, AU148430, AW409810, AA046465, AI151474, AA665447, BF307872, BE350083, AA205637, AU128145, AA814199, AI798631, AW401547, BE301787, BE542763, AI033726, AI754686, AI033798, BE398024, BE781856, AA630613, AA453721, AI805359, BG031788, AA188152, AU149270, W81051, BF304913, AU148555, BF434385, AU150518, AA203432, AI313161, BE256146, BF028526, AI917128, AI247573, AA902217, AA598637, BF673221, AU159717, BE018308, AA669100, AI148725, AA258277, BF102701, AA722696, AA223918, AA772216, BE564048, AU151891, AA206289, BE541361, W73094, AV682287, AU148912, AA600119, BF030146, AV682299, AI289498, AI140853, AU151745, AA708425, AI499489, AU160234, AA214058, W63803, AA046919, AI339988, AU150778, AI057433, AA987379, AL045205, AU151368, AU146605, AI146268, BF980171, AA135728, AU147709, AA190595, BE208017, AA075273, AA911938, AW069886, AU159450, AA423909, AI131080, AW403578, AA169787, AA876368, AA854656, AU146444, BF030206, AI439570, AU150454, AA150959, AA749229, W96559, AW627711, AA214057, AA423829, AI299152, W52494, AI146514, AA730060, N78430, AA764982, N35818, BG110893, AA423844, AA223957, T16208, AA216754, N67804, AA858190, AA778644, AU156617, BG166244, W95791, AA441782, BE397982, BF240250, AU149132, AA158193, AF026291, U38846, A45918, Z31554, L25913, AB022157, AC006006, D16933, D17080, D17253, X55330, T58141, T59875, T59966, T63079, T96847, R06272, R06330, R12541, R13924, R20963, R24213, R24214, R25228, R25902,

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HHEND31	903	1059180	1 - 2239	15 - 2253	BF025946, BF027606, BE887889, BE274308, BE257916, BF791517, BE539657, H51262, N29500, AW518849, F24788, H51832, AI219621, BE092196, AW518848, N57441, AA524424, AI633511, AA476617, AI865895, AW594528, AI651487, BG029856, AW070607, AW411291, AI990749, AW294106, AI343490, AI168676, BF769896, AA424669, AA424572, AI333001, AW195581, AA883493, AI816818, AW242846, BF769506, AI762004, AA906589, AW613755, AL527171, AI275107, AU153449, AL119069, AI631855, AA233248, AI963879, BE830910, AI768428, AI375226, BE838538, BE830904, BE081306, AI093148, AA705562, AW591977, BF359580, AI224972, BE838556, AI446154, AA229210, BE830908, AA233172,

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HTFNO73	907	1059415	1 - 1055	15 - 1069	BG027537, AI760770, AI807008, BE542138, BG121514, AI246426, AA758661, AI093284, AI623353, AA425589, AI953436, AA708524, BF108386, AI686282, AI985174, BF593056, BE292984, AA971092, AV758196, BF675731, AA831229, BE832101, BE832100, BE832103,

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HDABR73	908	1059532	1 - 1682		15 - 1696	AL536057, BE621676, BE741988, AL536058, AU119339, BE744459, BE378587, BE796157, BE378842, AI983859, AI188641, BE747937, BE742130, BF037284, BE740301, BE740930, BE563813, BE315119, BF796407, BF036145, BE563067, BE733406, AI819257, BE793554, BE744012, BE747573, BE271659, BE273401, BE898557, BE741463, BE741182, BE744371, BE747343, BE740836, BE743761, BE250007, BE740615, BE743726, BE741624, BE612835, AU118578, BE745593, BF036439, BE909331, BE743960, BE563771, BE612827, BE617787, BE741187, BE898606, BF034541, BE736299, AU135570, AW190372, BE906395, BE613272, BE741701, AW024509, AI982697, BE515259, BE906409, BE744503, BF036857, BE744695, BF038326, BE741281, BE515348, BE873534, BG116590, BF036488, BE745744, BE740015, BE612664, BE740873, BF038719, BE379468, BE272232, BE612831, BF035437, BE744260, BE271379, BF035175, BE394400, BE563064, BE315354, BE906753, BE899472, BE378543, AI149550, BE872877, BF035117, BE746985, AA843413, BE906163, BF036589, BF034503, AW583110, BE395267, BE910084, BE515311, BE395315, BE019905, BE271729, BE392414, BE617294, AW276453, BE869007, AW276419, BE515206, BE742967, AI022639, BE870918, BE311817, BE742113, BE867683, AI888932, BF853014, BE315347, BF038858, BF792372, AA779427, BE392271, AW438754, AW629644, BE869063, AI627588, BE899214, BF033988, BG178683, AI186468, BE621326, AI925167, AW168073, AI689311, BE390431, AW275877, BE745272, BE293876, AI684241, AI523546, AI199013, AI797261, BE393953, BF035502, AI140251, BE044623, AI473805, BE392821, BE621075, BE963030, AW167490, BF035223, BE393111, AI684174, BE393141, BE742280, BG106822, BE392012, BF941529, BF038912, AW613339, BE744103, BE514842, BE742664, BG255080, BE315034, BE390824, BE899489, BE613027, BE395645, AL038941, BF854473, AU145103, AA837517, BF116137, AI916679, BF038872, AI679059, AI921137, BE281519, BF032879, AW674573, BE512771, BE743687, AW510505, AI955305, AW131534, AW029106, AA915950, BG180201, AW629761, AI983048, AA866041, AW769050, BE741547, BF038553, AW263798, BE314998, AW088348, AW028733, AI034115, BE379326, AA854434, BE208252, BE736344, BE562631, BF435908, BE613182, AI003490, AW303937, BE293712, AI204099, BE908261, BE315110, AA581854, AA143705, BF036530, AW264648, BF436324, AW105631, AW275263, AW303959, BE742264, AA745970, BE315007, BE378339, BE746207, BF038753, BE389050, AI312907, BG001068, AW058613, BE536750, AW955498, N30199, BE908239, BE873618, AI365005, BF814644, AA845390, BE899025, BF132343, BE562447, BE395651, BE613391, BF804795, AI624991, AW613278, BE834314, BE315002, AB006534, U78095, AF027205, AX014903, AC011479, AR069031, Z36849, AL110280, AF231020, A23630, A65341, E03348, E03349, AK026533, AF090896, AK000753, AF067728, AX042059, AF217982, E12747, AF032666,

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HOGAJ24	909	1059626	1 - 2068	15 - 2082	BE379134, AI888030, BF128625, BE315492, BE745894, BE466278, BE392102, BF309700, BF090313, AI138758, BF035128, BF947100, BE673650, AW029058, AL119602, BE745470, H14434, BE843655, AA349626, AI372719, AA324193, AW136531, AI492113, AA349625, BF942915, AA324192, H14384, AA323454, BF308236, AW503953, AI372720, BE701341, AA326695, BF928744, AW899391, BF091837, BF129284, BF033438, AI372718, AA019306, AA021656, R52857, BE763486, D87465, AJ001453, AJ278999, and AC022392.
HTJMV05	910	1059692	1 - 1343	15 - 1357	AL533338, AL533177, BF344698, AI972455, AI474115, AI591062, AI818584, AI201413, AI273898, BG057719, AW518049, AA603336, AV724284, AW473681, AI970058, AI744020, AW950521, AI952552, AV723567, AA732056, BF663206, AI400103, AI675467, AA759046, AI203142, BG106770, AW589861, AI393848, AA291187, AI359478, AI359539, BF871968, AI634408, AA922462, AI890058, BF478007, BF088645, AA641809, AW294543, T28368, AA357035, AI657195, AA356558, BE076268, AA533579, AA284105, AA641772, AL532106, AW849966, L11329, U23853, and AR075978.
HOOIL70	911	1059710	1 - 2301	15 - 2315	BF976003, BG255591, BE737081, BF128847, BE869747, AI669358, AW574500, AW337117, AI624261, BG236470, AI802759, AW274480, BE872836, BE280264, AI436622, AA777455, AI241448, BE793202, AI214047, AW402432, AA574166, AU154023, BF969067, BE162510, BE901499, BE904079, AI382223, AA877757, AI379692, AI088105, AI079670, AW001896, AI241452, BE280812, BF896455, AA534306, AI274205, AV647149, AA679657, BG231909, AI439904, AA282664, AI656544, AW385182, AI140749, AI372965, AW073615, BF185370, AW402786, BF868702, AI192703, AA482536, AV647081, AW401577, AW406237, AV696093, AA910515, BF851252, AA025527, BF847410, AW073431, N91809, AI797822, D58678, AI491753, AA807121, AA005102, AA594367, AI937299, AA312612, BF868707, AW574667, BF893710, AW408249, AI652285, BF884407, AA641459, BE243024, BE280241, BG059397, AA975471, AI357183, BF662959, AA778878, AW272935, W31243, BF662936, AI247758, AI962576, AI040521, AW372928, AA364415, AA634861, AI570459, T63947, BE242245, BF214009, BF870464, AW518023, BF893670, AA337402, BF762332, AA971623, AW950683, BE513081, BF900388, AI241176, AA806951, BF351083, T28667, AA005103, AA426411, BE697295, AA937746, BE161991, AI907772, AA384860, AA721435, BE832442, T63326, AI123167, BE935009, R15726, BF378229, BF884412, BE832421, AA563915,

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HUNAE87	912	105974 3	1 - 943	15 - 957		BF205763, BE542556, AW602105, AW501478, BE279707, BF734085, AW845227, BE926163, BE241826, BF989806, AI751428, BE242794, AV656636, AA299026, AV656609, BG002474, BF851533, BE383929, BF812975, AL040310, BE185148, BE169980, H57695, T05030, BF084353, AW732695, BF752738, AI703311, BF086412, BE618406, BF814907, AF062336, AF062317, AF062319, AF062320, AF062321, AF062322, AF062325, AF062327, AF062328, AF062330, AF062331, AF062334, AF062339, AF062341, AF062323, AF062332, AF062335, AF062337, AF062338, AF062324, AF062329, AF062343, AB002382, Z17804, AF062333, AF062318, AF062344, AF062326, AF062342, and AF062340.
HTPHO01	913	105976 4	1 - 1068	15 - 1082		BG031300, AU121404, BE745068, AW340658, BF672040, AI830575, BE296082, BF104795, BF205385, AI970997, BF436314, BF436678, AI375239, BF033148, AI955746, W52045, AA452348, AA505698, AA452125, AW403701, BE250987, AI742513, AI199971, AI338181, AI338219, AA926692, AA938400, AA644138, AW402946, AI344126, AI675706, AI300753, AI186703, AI183773, AA156689, BF194804, AA884026, AW938860, W60021, W38892, N95054, AI148098, H01993, AA954291, W44927, BF106195, AA805553, AI751818, AW170013, W39574, AW150567, AI864148, AA280408, AI494112, H04586, R27968, AI193848, AI078102, AI936538, H39712, AI198333, AA194406, AA094826, H02089, BF694536, AA363376, AW959394, AA642334, R28221, T94680, AI373118, AA280407, AA994085, AI352072, AW973632, H13826, AI818830, AA918331, AA554306, AI093632, AI276589, AA447655, AI273430, N30561, H28693, AA134664, AI278504, AW341382, H13182, AI934888, W24049, AW858525, AW861944, AW861914, AW858490, AW858455, AI142134, AW971368, H13867, AW972879, AL134524, AW971207, AW975661, AW970561, AW973817, AW971122, AW975696, AW973756, AW971308, AW979267, AW974137, AW974982, AW975026, AW973721, AW971175, AW970626, AW972839, AW973648, AW975061, AW971296, AW971145, AW979309, AW974123, AW979310, AW971279, AW971339, AW972409, AW975389, AW975999, AW979317, AW971107, AW971992,

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HDPWK69	914	1059784	1 - 483	15 - 497	BE336913, BE735084, BG177051, BG115809, AI201776, AL514548, AI525640, BF205941, BE903276, BE929876, BE312055, BE261573, BF911153, BF911226, BF911152, BE295053, AW411495, BF308316, AA738028, AW403566, AU141467, AU077092, BF683650, BE899583, BE397737, BF982913, BF206934, AW411017, AW245548, AW248320, AW245816, BF987515, AI750480, BF684995, BE614142, BF987508, BE019048, BF850976, W58719, AW246237, BE397252, BE269186, BE267606, BE315417, BE267874, BE513877, BE560286, BE731247, BE797425, BF954541, BE389823, BE391286, BE392270, BF303974, AL515420, BE733007, BE869407, T35777, BE045345, BF528622, BE271945, BE741426, BF987526, H49449, AA581199, BF975243, AL534668, BG163503, BF954542, AW249085, AI750467, BF246555, BE785416, BG025673, BE302637, AL518566, Z44026, BG115160, BE302638, BE410267, BE250546, BG163434, BE871158, AA314558, BE265447, BG251036, BE777968, BE741047, BE873520, BE300463, BE390220, BE277785, BE389706, BE548855, BE407189, BE275582, BE276320, BE274389, BE275212, BE274887, BE796598, BE263988, AW246104, AA852697, AW732316, T35602, BE902471, BE900774, BE733887, AA481899, BF911224, BE892347, BE407783, AL109827, and Z22466.
HPCOK03	915	1059849	1 - 2056	15 - 2070	AL516768, AL518528, AL516767, AU124034, AL518529, AI038260, AU132739, AU124236, BG168689, AU120266, BG027837, BF965774, BE882118, BE547389, BG027828, BE779679, BF062086, AI126792, AI884785, BE296227, BG250804, AW957623, BE299015, BE785170, AI917458, BG116309, BG110174, AW516673, AI689761, AW732512, BF218050, AA313688, BG108532, BE503915, AU154211, N64029, BF304720, AW409753, AA629662, BG164674,

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HVVBP14	916	105985 2	1 - 2041	15 - 2055	AI458677, BG113558, BG121106, BG171686, AW994500, AV702133, BG117173, BG115089, BG111087, BF343716, BF828843, BF829681, BF337845, BG115532, BE787714, AW606596, AU132146, AU142931, BE537132, BG118340, BF826024, AW069171, AI908290, BG001540, BF574744, BF345139, AI817760, BF680782, AV746169, BF217297, BG164687, AI457607, BF828614, AW384091, BF112151, BE563366, BF540810, AW157443, BF828601, AW157182, BF185879, AV746201, BF816368, BF106026, BF347142, AU117794, AV746339, BF790933, AW026652, BF674283, BF508654, AW604674, BF827085, AW068896, AW172774, AA573787, AW606615, BF525732, BF446072, AI015329, BF826141, AI741571, AV746329, AW261860, AI808809, BE180528, AI809263, AW803964, AI589854, BE621130, AI246006, BF383145, AI638864, BF589354, AI582167, AW995360, BE621552, AV746237, AW117301, AW384072, AW873335, AA191422, AW273374, BE549656, BE504212, BF826112, AI033917, BF930719, AI018004, AW168821, BF816362, BF130935, AI366144, W07385, AW339114, BF223629, BE041847, AW274618, AA480828, AW861537, BF435125, AI689934, BF826149, AI142724, BF245347, BE810306, BE742456, AI672739, BF431193, BF826134, AA041259, BF340103, AA410869, BF814554, AL538338, AI922909, AA114081, BF195307, AU138600, BF816413, BF680922, BF195593, AU137360, AU136469, BE645054, AL527496, AW052081, AW857695, BF112077, C17509, AA209279, AI379051, BF919850, AA446122, BF573765, BE856614, BF229165, AL524734, AA429980, AI086883, AA446430, BE538804, AI936200, AI084992, AA639227, BF084673, AI242682, AU135551, AI081085, BG179108, AA507856, AA976105, AI859258, BF056523, BF247734, AU136580, AI281062, AA933012, AA658931, AW189095, N48334, AA774240, AI299111, BE272095, BG118976, R67390, H04035, BF826806, AV745246, AI368091, AA709018, AA910766, BE877841, BE545689, BF209170, W26396, AI097285, AI681347, AW951203, AW132085, AA181643, AW369852, BF825868,

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HOOJC15	917	105996 7	1 - 1499	15 - 1513	N23036, AW069188, AA312842, BE837689, N28698, AI859142, AU159346, AV714891, AU153662, BE675292, AW965809, AU150988, AW605548, BE965774, AA494486, BF310138, AI024942, AA587968, BF694016, BF111207, AA663127, AI143246, BF891442, AI093098, AI963205, BF969769, BG249168, BE732149, BF031298, AA305846, BF684799, AL521968, W04430, BG028071, W56324, BE732105, AA573252, AW675226, BF345673, AI469839, W56244, AA470048, AA502907, AI674900, AI823838, AA536108, AW337905, N79195, AI378060, BE208643, BE208461, BF973626, C02367, AI085703, BE537520, AA836367, AA416876, AI689700, AW376741, AW505291, BF570805, BF341027, AW363086, BF221634, AA442519, AI371309, BF980019, AA642512, AI954659, BE837802, AA399550, AV652925, BE264023, BE266231, BF754737, AA935807, AW976875, BG027843, BF806676, AW578946, AL515221, AI479754, BF857849, BF806728, AI654305, BE738121, AW970913, BE158832, AA837000, AA744021, BE241611, BE843184, H73550, BE158779, AI792377, AV720699, AV729885, R97239, AL120004, BE314980, BE740092, BE744793, BF991592, BE742591, AA318894, AA516193, AA279385, AA515733, AW897556, BF772490, AI805439, BF771419, BF916935, BF770580, AA209208, AA533054, BF916919, AA669560, T26476, AW819524, AI343169, AA445908, AA070456, H94751, AU118265, AI697425, AK022952, AL117639, AK027026, AK022576, AK023227, AK021695, AF132856, AF068289, AL157877, AL137707, AL139008, AB040962, AC005993, AL157384, AL355916, AC004975, AL034379, AL158832, AC013429, U62317, AC005730, AK027217, AC020908, AC006536, AL138733, AP000048, AC005081, AC009032, AC004626, AC005821, AC005383, U91321, AC003048, AL109758, AL031274, AC005829, AF045555, AC008745, AL121997, AC003101, AC020913, Z84466, AC002477, AL132773, AL022316, AC010422, AL133174, AL118505,

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HODFG47	918	1059969	1 - 1250	15 - 1264		BF345673, BE732149, BF684799, BE732105, BF973626, AL521968, AA922195, AW873081, BG249168, AW194609, BF310138, AW197591, BF341027, BE537520, AI185740, AW965809, BF694016, AI149726, AI800098, AA305846, BF341904, AA640513, AW675226, AA935807, BG117398, AA312842, BF341862, AA713593, AW449858, AA470048, BE876387, AA704143, BF110474, AI628310, AA176983, AA737820, AL521967, AA397353, AA702002, AA983700, AA975245, AA863436, AA983708, BF570805, AI471343, AA416876, AW965126, AI282285, AI913509, BE081596, AW376741, T32544, AW505291, AA046362, AW363086, AA724214, AI610316, R84594, AA714758, AI915421, N47199, BE081889, AI670874, AA442519, BE266231, AI954659, D19789, AA773604, BE264023, BE082127, AL538302, BF204069, AI479754, AI678909, F30845, BE774943, N28698, AF132856, AF068289, AL157877, AB040962, AL139008, and AL137707.
HBIPC05	919	1060137	1 - 1003	15 - 1017		AL537138, AL537137, AJ403115, BE464560, AI049667, AI921266, AI476756, and AI680380.
HOPJJ32	920	1060193	1 - 991	15 - 1005		BE559626, AA648932, AA742693, BF196375, AI243725, AI417050, BG107805, AA877170, AI400330, BG055356, AI688228, AI688239, AA682467, AA918714, AI033070, AA701935, AI250796, AW264399, AI243869, AA705038, AA743538, AA227787, AI735761, AI160787, AI807505, AI376819, AI078674, AW043673, N33011, AI247552, AA860111, W93664, AA284309, AW515896, AI351848, AA757540, AA677285, AA461254, AI417138, AA625139, BE908226, BF570801, AI765604, AW949994, AW949993, AA907925, AI219692, BF030135, AI699352, BG177209, AA731398, BE788620, AU122917, AA807487, AA723789, AI333471, AA946979, AA015678, AA767126, AW410993, AI198618, AW016005, AV720207, AI365028, AA975429, AA677912, AI167442, T95667, BF132906, AA918597, T27775, H49351,

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HNOBN20	921	1060382	1 - 1545	15 - 1559		N47880, BF334493, AW469956, AW363838, and AC004671.
HOCPX74	922	1060391	1 - 1870	15 - 1884		AL524597, AL519648, AL530831, AL519649, BE734258, BF347653, BE871077, BG104745, BF348323, BF343876, BG104449, BE869842, BE888412, BE273552, BE780351, AV690410, AW170543, BE314522, BF795175, BF663039, BF375780, BE149568, BF913222, AW603794, AW604899, AW001348, BE297766, BE265374, AI335452, AI925444, BG164669, AL524596, BF528067, BF975942, BE797960, AI608844, AL536780, AI817215, AV685897, BG029777, AI591352, BG178695, AI811673, AA853941, BE157959, AI805743, BG011563, AV729006, AA565014, AW604898, AW973191, AI345340, BG258971, BF445253, AA279139, BF352395, AI832033, AW604905, AI366971, AW152126, AA923303, AI366962, AI382206, AA434149, AI934699, AW362579, AI571300, BF330697, AW604908, AI628955, AI334950, AI201993, BE565222, BE275563, AV692860, AI913195, AW190506, AI553809, BE263940, BE263361, AA478024, AI766662, AI860471, AI435257, AV706788, AW274219, BE567651, BE267179, BE675074, AI340530, AA733167, AW073037, BF914370, AW609796, AA825666, R84539, AI581149, BF594915, AI949327, BF330696, AW104823, AI675988, AI393781, AI359747, AA292729, AW089578, AW301969, AV749661, AA434430, AA057489, AI628311, AL041758, BG058748, BF832690, AA485730, AA936549, AI969209, BF982895, AI377017, AI923566, C06478, BF887827, BF793586, AA459081, AA458890, AA564803, BE259264, BF887828, AI914921, W79182, AA057212, AI004361, W74428, AI349785, BF765630, AI687123, BF737458, AW966062, BE063151, AI359732, AI689065, AI167359, AI626037, AI334448, AA434203, AI288378, AA652404, AW956458, AI345581, AA293168, AI348864, AI349414, BF756936, AA740650, AA026165, AI343129, N95348, W25257, BE732289, AI376726, N68518, BE063152, W79074, AA810877, AV746022, AW071400, BF762446, AI312239, AI313347, BF895302, W00714, AI214147, AI457337, AI349751, R87384, AI018718, AA588542, T11665, AA953579, BF847574, AA310626, BF817632, AI085839, AW439522, AA429455, AA278412, AI042587, AA604993, AI434894, AA484907, AW272911, AA428689, AI254351, AI207020, BF829151, AA552581, AV696837, AA053182, AA580658, AI340724, AI349182, R85670, AW873126, AV657729, AI954961, AA573103, Z40757, AI090867, AI301832, BF876341, AI088716, AV696392, AV684547, R88960, AV745986, F34685, AW768933, BF346694, AI338123, AI811398, R89629, BE150220, BF829538, Z46084, AV749887, AA079521, AA434271, AA349776, BE089845, T32439, AI362261, AI571605, AI207037, AA079569, AA293308, T51217, AI907977, BF851263, BF526982, AI369567, AW576248, AW188668, BF894716, Z43547, AW973210, H27199, BE062964,

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HTEPP27	923	106041 5	1 - 720	15 - 734	BE906519, BF590795, AW166407, AA425184, N75682, BE549827, AI990649, AV690903, AV749752, AI768535, AA504168, D45332, R20997, N51177, Z43298, AW969016, AW207406, AA156619, AI024330, R81435, BF798183, AI476407, AW628995, BF093913, AK026377, and AC079610.
HLYAJ79	924	106049 5	1 - 854	15 - 868	BE877313, AV707414, BE877897, BE898244, AI207423, BE880171, BE879486, AV712023, BE874183, AV646609, BE877724, BE877360, AV713937, AV646653, BE876255, AV646649, AV646504, AV728530, AV725312, AV704989, AV706544, AV708364, AV710865, BE876145, AV707576, BE875452, AV704821, BE876209, BE879161, AV717895, BE876129, AV704136, AV710411, AI653760, AV728726, AV727727, AV646639, AV704410, AV705900, AV646554, AL037048, AV646616, AV702289, AA669077, BE876191, BE874129, AV704743, AV716924, BE881017, AI557254, AL048429, BE877534, AI065079, AI133420, AI133314, BE877089, BE873910, BE878189, BE878144, BE874933, BE875679, AI064797, AV646560, BE879920, BE879482, BE877490, BE881406, BE878843, BE873856, BE881677, AV704545, AV709377, AV716245, AV723801, BE876227, AV701103, BE880558, BE880965, BE880379, BE892986, AV715880, BE892997, BE881087, AV702097, BE880616, AV715527, BE881605, AI884494, BE879931, AV701289, AI133218, AA081407, AV723748, BE877550, BE875048, AI061660, AV654563, BE876526, AV691015, AV716518, AV693793, BE876857, AV693806, AV723085, AV702987, AV725077, BE875611, BE875017, BE879660, BE898249, BE880104, BE881578, AA886596, AW188463, AV686634, AV716707, BE874992, BE877148, AV725697, BE874412, AV721842, BE883115, BE868953, BE872765, BE869861, BE867046, BE868935, BE877853, BE876076, BE874887, AV757464, BE872576, BE867519, BE866703, BE874381, AV729458, BE870019, AI888487, BE867152, BE878535, BE876950, BE871969, AI064695, AV702362, BE877908, BE878111, BE873978, BE869555, BE867007, AL037870, AV703548, AV686024, AI459473, BE868476, AV706391, BE876777, BE876151, BE878325, BE879105, BE881405, BE874441, BE875672, BE876996, BE876184, BE881324, BE877404, BE872183, AV701547, BE878096, BE876772, BE892671, BE876933, BE880480, AA659265, AV724031, AA487595, BE895696, BE876529, BE893859, BE867946, BE873745, BE878628, BE877533, BE876273, BE874818, BE878625, BE875010, BE877218, AV715658, AA594949, BE880710, BE880906, BE875274, BE898642, BE869867, AV761230, AI924211, AV719659, AV724182,

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HCOOQ11	925	1060656	1 - 875	15 - 889	AW007037, AI884511, AA886989, AW193931, AI817713, AI249758, AA865294, AI951033, AI264240, BE613246, BF312076, AL038486, BG112904, BE744581, AI951027, AW577113, BG236451, AL519420, AW188640, BF312870, AA996176, AI991217, AU148172, BF344181, AA731851, AA741112, BE046060, AA527051, N53946, AI827285, BE868637, AL514001, BE670726, AA596053, N40254, AA579782, AU158854, AI078704, AA631758, AW959940, AA011629, AI275213, BE042693, AI435452, AA873027, AI206083, AI143622, AI811645, AA411414, AI887412, AA291435, AA808109, N23620, AA570435, AW845068, AA135399, AI066472, AW513124, AA682204, N35737, AI344485, BF514798, BF980552, T56288, AW662379, AA401883, AA156540, AA934515, N32127, AW338269, R83770, W63671, AA676312, R73855, AI056012, AI193778, H81756, W00608, AI569186, BE221170, AA411416, AW025247, BF851746, W61083, AA614043, AI888903, AA502388, AI628321, AA904082, AA506667, AA827494, AI002292, AA740494, AI061269, AI926417, BF946323, AA877480, AW519260, H82073, AA961238, Z41638, AI268112, N23619, BE407605, T52457, AI569627, AI597779, AA888216, AA996210, BE301554, BF197866, AI636718, AA230148, AA157698, AA045288, N68931, AI241476, AI520807, N30126, BE813412, AA290634, R02156, R66915, AA513443, AA513637, BF771899, BF982556, BE963002, R27899, R73856, AA007540, AA876184, F21046, R33645, BG115606, H77609, AW793338, AI589492, AA229874, BF990846, AA291041, AA502601, AI368907, T54493, F04593, AA807759, AW449509, R42729, BF206077, BE004381, BG122255, AW780372, BF512161, H84829, T54441, AI971366, T79762, R27807, AA078930, AA782709, AA228443, BF980481, AI538648, AA228276, AA011628, N24545, BE703483, BF835233, H85291, N33993, AA953353, AA135953, BF434060, AI371269, BF738422, N56794, AI940121, AA844546, AA007539, R83623, AA345305, AI423659, AA886375, AA362021, AA360790, BE706771, AI368904, AI940130, AI345688, AW022682, AW161156, AL119828, AI521799, R36363, AW080402, BG033199, AI868204, AI567582, AW827289, AL079963, AI559632, BF525883, BF525838, AA287231, BF338002, BF885081, AI446538, AW673679, BF982265, AW834302, AL514879, BF061283, AI500061, BE785868, BF680131, AI440263, BE964614, AV723953, AW827206, BF968666, BE965621, BG164558, AV712672, AI249497, BG121959, BF856052,

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HWMGI51	926	1060711	1 - 819	15 - 833	BF339831, BE796624, AI700528, BE395758, BE467661, BF111421, BF433143, AI971312, AI948489, BF433685, AI697802, BF445135, BE467475, BE550025, BE504014, BE504328, BF588505, AI701112, AI821852, BE502931, BE671111, BE669732, AW005781, AI697744, AW051336, AI452530, BE218089, AA843787, AI042349, BF433186, AI701426, AW958120,

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HDPJG33	927	1060780	1 - 1156	15 - 1170	BF970702, AW167099, AI628843, AI093592, AA470016, AI926603, AV718913, BE670151, AI986035, AI027777, AI313500, AA782005, AW473593, AA412294, AI299627, AI610236, AA617710, AA514353, AA423925, AA860421, AW131013, AA781518, AA423887, AI160307, AI446603, AW409605, H30472, AW169172, AA533814, AW368627, N69522, AA654163, AW513267, AA922534, AI440188, AI049694, AA412735, AI306695, AA865403, AW068125, W69267, AA459402, AI347601, R26875, W69345, AW959274, AA534481, BF810819, AI865836, AA745698, AI002434, N79834, AW044069, N58666, R72510, W67475, AA626929, AA932913, AL044134, AI539588, AL044135, R72511, AA430220, AI223230, R70436, AV695422, AI902383, R53036, H72504, AI383150, N54138, AW088334, AA545735, AI186385, AA359811, H24955, AI205760, BF946002, AA491113, AA024807, BE825978, AV744309, W38450, R94735, AA834248, N58200, BE242095, AI752781, R69450, BE543595, AA431234, AI648587, AI902360, AI436086, F04994, C17844, AA295920, AA552310, BF801989, AA034305, H77299, BF802042, D29280, H72902, AA861991, AV651047, AU154873, W67476, BF511557, R11021, AA411966, AI051263, BF914312, R27103, AI926118, BF855633, BF339384, R53035, AV651824, H25748, BG231151, AA432254, AA865593, AA643144, BF306192, R94818, AI016462, BG164558, R72498, AL042382, AL119399, AW983783, AW983832, BF970990, BG168696, AI538850, AI494201, AA225339, AI308032, AI344785, AI824576, AW074993, AV682479, AI312152, AI802542, AL079794, AW983829, BF904180, BF814357, AV743962, AL119457, AV741327, AI537677, AW075351, AI349614, AI698391, AW161156, AI349937, AI620075, AI829327, AI564749, AI885982, AW079572, BG113188, BF812960, AI270183, BE965129, AL046942, BF968910, AW162194, AI340603, AI478123, BF792961, BG029829, BG113299, AI610362, BF925729, AI345688, BF792928, BE544111, AI436456, BF885675, AI334884, AL042544, H89138, AI869367, BF725868, BG030364, AW148320, AI343112, AI624293, AI923989, AW051088, AI349598, AI349256, AW008085, AW129929, AV753074, AW263453, AI687415, AV759831, AI696846, AI440239, BE964614, AL048871, AW020693, AL036638, AI612913, AI696626, BF904265, AW950035, AI890507, BG249582, AL041772, BG256090, AI916419, BE895585, BE047852, AV681858, AI950892, AV738991, BG166654, BF680133, AI570807, AL514359, BE963838, AI623682, BG035511, BF061283, AW880037, AW050850, AI961589, BE966699, AI537273, BG257535, AW169653, AI345735, AI613038, AL119863, AI282281, AI591228, AV704051, AI802240, AL110306, AI798456, AI446538, AV760409, AA761557, BG179993, AV733470, AB046851, X52574, AK023297, I89947, Y11587, AF130055, AF119899, A65341, I48978, AJ006417, AK025092, AF017437, AL110280, AL162002, AL137480, AK026408, AK027096,

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HAJAQ63	933	106123 8	1 - 3970	15 - 3984	AL515424, AU133217, AU117140, AU142384, BG033833, BE876803, AU139465, BG259851, BG167796, BE743306, AW473531, AU135959, BE875637, BE888606, BG260336, AW580231, BG107108, BG179511, BE887292, AW238825, BG027450, BF671771, AU119885, BF575632, BG036892, BF791887, AU117158, AI689392, AI969513, AU136366, AV752386, AU127278, BF794737, AA577695, BF347777, BE539387, BE888461, BF035474, AL046713, BG107285, AU135160, BG025131, AL039354, BF061987, BF812543, BG031453, BE734936, BF212314, BG259074, BF981318, AW851018, AW957785, BE552121, BF819996, AW379372, BE835355, AL039548, BE893099, BG032762, BF693254, BE439886, BF209896, AL040257, BF207817, BF688672, BE466166, AW965646, AU138546, BE888383, BF514065, AW814786, BE889498, AU144064, AI338724, BF528934, BE568710, BF790899, BF790348, BE969916, AU151881, BF381749, AI753682, BE537675, BF038173, AA927334, BF240276, AW966689, BF242051, BE835432, AI742904, N20178, BF103706, AW963156, BF382259, BE567450, AW369137, BF750387, BE280960, BF920929, AA313265, AA196578, BF744444, BF693176, BE961188, BF814166, AL048800, BF669614, BF695646, BF747979, BF573281, AA584433, AW205552, BF210307, BF930968, BE967604, AV758139, AW075512, BF229128, AL041181, BF931659, BG014272, AW957862, AW297463, BG032249, BF696371, BF242624, BE841199, BF904837, AW293263, BE537740, R70619, BF789995, BE889296, BF247682, BF934769, AW814722, AW517759, AA076256, BF688897, AW369831, AI580344, BF965679, AI917185, AI348555, BE089815, BF742017, AA579344, BF930639, AA578603, N29079, BF750787, AA747403, AA649704, R80337, BF102774, BF674705, AV747890, BF210080, AA355742, AI281795, AA326479, BF028979, H11175, AA083989, D82206, D82173, AA642754, AA326164, AL515423, BF229913, BF238375, AA363512, BF672447, BF977594, AW075837, BE736387, BF742025, AW576881, BF692010, BF820629, AA344537, BE818113, BE001659, D82200, R60858, AV738050, AA650232, AA808866, BF375716, BE972715, BE893554, BE818095, BE172915, R22704, AU077250, AA133820, R13289, AA301326,

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HVVBK70	934	106125 8	1 - 1629	15 - 1643	BE746661, BG117435, BG252083, BE877320, AI806227, AA178948, AI016759, AI653545, AW573210, AA927605, AA631986, AW592037, AA531275, AI018243, AI660515, AI831705, AA568173, AI984148, AI581183, N98668, BE379164, BE271705, BE746583, BE394807, BE272756, W88624, BE887776, BE393523, AA004850, AA134872, N94263, AA426075, AA045761, BF435518, AW376913, AI673780, AA719164, AI345684, BE047692, AI921655, F36014, N69655, W88625, AW370783, AA004659, AL040320, BE882506, AA199851, AA045760, AW378878, AI682887, BE062798, AW370763, BE297968, AA634581, F32535, AA583661, AA025749, H13681, AA405861, R97397, AA134873, BE296854, AA046099, BE733701, AI829163, D58431, BE743785, AI863398, F24760, AW009286, AI440272, AW885403, AI940469, BF590167, AI688326, AW935165, Z24923, F22372, BF742972, BE879452, F33891, BF826768, BF856608, AA045994, BE621382, BE733458, AI832776, AI357679, AA043984, F19411, BF856598, BF857638, BE311732, H13728, R97441, BF856594, R24161, N66145, BF856596, R49671, BF856586, BF856597, AW601232, F36904, AA025901, BF826760, BE407674, BE278843, R24175, H01735, BF857636, AW379124, AW379128, H00992, AW104282, T61947, AW379135, BE730674, BF105945, BF087158, Z24932, AW601233, AI640673, AA044038, F35309, BE538525, AW379126, BG118318, AW362195, BF835188, AV706662, AA128148, T59326, AW379134, AA178993, AW853877, AW378910, BF857639, BG111319, AA618396, R26642, AW850722, BF510012, AI690017, F31129, AW850563, AI689995, BE301917, F30217, AW379136, AW418766, AW378905, F34755, F22842, F00363, AA345998, BG013553, BE065767, AA034504, AW805008, AA936926, BF773367, AW804639, AI656281, BE965287, AI868108, BE277985, AW372049, AA126983, AW381206, BF351128, T62177, F37877, BF810848, AI905007, BF857640, BF773378, AA223532, AA223444, BE618269, C18341, BF914199, AI000414, AC008760, AC020954, AB006914, L40379, AR032003, and F22843.
HVVBA82	935	106133 2	1 - 946	15 - 960	AV758998, AW104667, BG111699, BF984753, BF981305, BG036253, AI660239, BG181014, AW192662, BF981880, BE549196, BE541171, AV734020, BE220777, BE748099, BE538578,

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HTPCH84	937	106146 6	1 - 1210	15 - 1224		BF339551, BE878006, AW083241, AW262121, BE878908, BE873766, AW662363, AW471440, BF001490, AI718743, AW083914, BE879166, AW014771, AI857725, AI290210, AA025673, AI520716, AW769220, AW006931, AW204999, BF591174, AI561219, AI380034, AW080544, AA613366, AW771720, AI282851, AI185297, AI624643, AW272130, AA740147, AW083605, W67560, AW801019, AW316995, BE877829, AA603704, AA577603, AI910466, AA514270, AA158406, AA155646, AI446656, AW080904, M91489, AW955349, AI472456, AI862475, AA025672, AA325843, AA155701, AA639402, BG251426, AI791349, AI623302, BE879306, AI432644, AI431337, AI432647, AI431307, AI431316, AI431346, AW972093, AW968355, AI432675, AW968356, AW968729, AW972092, AI432674, AI432676, BF859009, BE672745, AI431347, AI432653, AI431230, AI431328, AI432654, AI431354, AI432655, AI431310, AI431312, AW081103, AI432650, AI432677, AI432661, AI492519, AI431330, AW128897, AI432649, AW971740, AI432651, BE672748, BF448552, AI431238, AI431248, AI432643, BE672767, BE672759, AI431345, AW972090, BE672743, BE672719, AI431353, BE672742, AI432658, AI492510, AI432672, AI431243, AI432666, AI432665, AI432657, AW972091, AI431247, BF589777, BE672774, AI432662, AI431357, AW128900, BE672625, AI431351, AI431254, AI431241, AI431255, AI432673, BE672644, BE672732, AI492520, AI431751, AI492509, AW129223, BE672738, AI431231, AI431257, BE672792, AW969229, AI431308, AW128846, BF589864, AI432664, AI431350, AI431323, AI431318, BE672626, AW079749, AI432645, AI431235, AI431321, AI431315, AI431314, AW128884, AI431246, BE672749, BE672744, AX017828, AF104419, AL157435, AF217794, AB029011, AF217793, AF134240, AL121845, AF217796, AX030436, Y17793, AX030435, AR071207, AF064854, and AF019249.
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HLGDA34	939	106154 3	1 - 1756	15 - 1770	AU120416, BE744242, AI802087, AI334107, AI679782, AA668147, AA777986, AI610074, F24745, AW814632, AI065031, AA904211, AV762162, BF984148, AW754413, AW754426, AU146342, AA482928, AI791659, AA584151, AW023111, BF991881, AI031759, AV758870, H68343, AI818362, AA873176, AA577748, AW237905, AA525331, AV720457, AW151247, AA584655, H85808, BF763954, BF991882, AV760014, AA558404, AL042667, AL042670, AU147414, AW572721, AI859834, AV761107, AV732057, BE243207, AW471332, AI452836, AW243817, BE090515, AI669421, BE154832, AW275432, AW151761, AW976024, T74524, AW754429, AA297776, AI355246, AI499954, BE138594, W96522, AV730440, AA425924, AI187148, AI251429, AL037910, BF725844, AA633875, BG054730, AI755214, AW576251, AW192599, AI569100, AI754567, AV763026, AV763058, AI038304, AW117860, AI049955, AI457313, AV756491, AI634187, AI446336, AW962611, AW500684, AW674631, AI249688, AW069227, BG026977, AA489390, T47138, AA666295, AA644090, BE396138, AW958962,

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HAICB08	940	106162 9	1 - 418	15 - 432	BE548483, BG011743, T83015, C18279, AA143436, BF149348, BE737483, AA625504, BG015853, E16696, AR060023, X84325, and D89821.
HVVAW60	941	106169 4	1 - 1751	15 - 1765	AL522960, AV716079, BE562316, BG257743, BE514489, BE514402, AW960737, BG118714, BF305711, AV760248, BG168581, BE908798, AI676130, BE396634, BE296285, BE548005, BE883381, BF027184, BF184561, BE564819, BE295446, BF210212, BE786704, AV728718, BE549142, BG113812, BE565708, AI991800, BE379623, BE537293, BE269782, BF031906, BF732339, AA307685, BE019417, BF589492, AI936232, W67860, BF541439, AI640485, AW573248, BF184405, BF002320, BF196840, BF305465, BF211313, AI628790, AA524353, BE380048, BE270486, AI824956, AW590315, AI990762, AI800990, AI335005, N31143, BF110487, BE568262, N21294, AW152627, AW612791, BF976876, BE565937, AW302169, BE268289, AW002644, N21128, AI333331, BF594576, BE671185, BE565017, AA994852, AA983846, BF571446, AA595031, AI420382, BE208007, BF241220, AW801675, AA610108, N90992, AW071591, AI240604, BE464059, AA678009, N31229, AI264921, AI655233, AI611678, AW819529, R70013, AW819596, AW749326, T64746, T31944, BG112244, AW015641, AA084445, AA579237, AA570191, AA935035, C15927, AA358195, AA081627, T07826, N94623, T34036, Z44938, AA380035, AW819534, BE961033, AA579517, R58098, BF593322, Z44410, N69498, D60023, D52558, AW373952, AW369584, R70058, AW732725, BF377913, BF155961, AW373174, BF088421, BF831228, AW373195, AW089404, W23822, BF377935, Z41687, BF831227, BF093517, T83793, BF088432, T32675, W67803, AI566308, H98950, F03903, AA358196, AI360228, AA913439, AA094862, AA129262, AA129234, BF734127, AK026636, Z85996, AF151882, AC011742, D16898, and AF090992.
HPDVB50	942	106170 8	1 - 2277	15 - 2291	BG110784, AU133851, BE895171, AU139859, AU136530, BG252145, BG110641, BG030216, BG115009, AW885996, AL522229, AI750569, BG180358, BF665151, BF701424, BG250200, BE622539, AW953720, BE879873, AU136623, BG163703, BE746945, H98997, BF668726, AI453574, N45209, AI038373, AV715925, AW157069, AA488398, AI031961, AI936414, BG055400, AU157578, AA917614, AW613506, AI242693, AI830692, AI817023, BF575831, AA975353, AW873961, AI379087, AI393586, AI969695, AA706024, AI469100, BF726482, AI143014, AW163037, AW029292, AA873241, AI375856, AW068933, N75082, W47315, AI206378, AI131506, AA868954, W37909, BF031608, N47942, AW194555, N40179, AI857755, AI521640, AA195724, BG118437, AA147923, AU156272, AA031314, AW055122, AL523048, BE175623, BE175622, AW197580, AA931438, AA195737, N20825, AI630350, AA534465, BE622705, AA635980, AA027826, AI347838, AA456304, AI041938, AI359317, AI671889, N53037, AA488531, BF209307, AW967825, W61353, W37969, AI042257, AI039277, AI266252, AA243394, AU157831, AA456702, W96493, AI184272, AI862590, AA583907, BF030909, BE045250, N26004, N59632, AA582503, AA632122, N27670, BF214953, AI651899, AA670437, BF195792, AA581612, W07653, AV653088, AA836144, AI825487, AI128759, BE465673, AA291904, W47200, AI183354, AI800321, H45131,

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HAZAY40	943	1061765	1 - 3107	15 - 3121		AU124207, AA878323, AV727477, AA813018, BE819431, BE819398, AI982712, AA633959, AW950933, AI956077, BF064281, BF109192, BE140132, AI208234, AV727935, AW383147, BE219365, AV728174, AV728496, BF338980, AA778801, AV727596, BE677722, AI474131, AA918211, BG250843, AI458506, AV706403, BF761352, AW196922, AL046869, AI199333, AV726144, AI754255, AW189937, AA101251, BE140101, AW008386, AA629410, AI276190, AA729919, AU137006, AW383099, AA411867, AW379346, AA411868, AI122819, AL046278, BG112787, AA350955, AL043466, AA778905, AI129808, AA906089, AI092120, BE938096, AA909370, BE220435, AW950111, AU156976, AW956564, AI217746, AW957591, BF093718, AA724295, R59145, AA142828, AI150676, AI859223, AW629051, AA350954, BE003474, T28874, AW856987, AI372582, AV654911, AI891046, R79559, BF766005, D58168, AI372585, W86981, AA688237, AW630587, AA112699, AA634462, AL048948, BE843792, R52701, F03219, T78821, BF447006, AA332608, AA025541, BE007851, AW072205, BF960536, AW627416, BE818041, R52752, H05997, BE003009, AA025613, AI204948, AA386124, BE719764, BF924561, BF755685, D51900, H05950, R59146, F21451, R41764, AI372584, AA334615, AW992555, AL039813, BF913530, F13339, T03639, F06952, BE813304, AA350943, BF986036, D56855, R79560, AW379200, AA112698, AI372583, T57699, R77478, R14949, BE938524, BE844105, BE844110, R23531, R45204, T57740, BG260187, AW082382, BE707402, R44663, BF914630, BF515358, F05976, BF753509, F02220, BF750798, BF761340, AA368172, BF761346, R77577, BF929007,

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HACMZ51	944	106176 6	1 - 5344	15 - 5358	BF795041, BG176854, BE889259, AI123797, AW968653, W80418, BG107937, BF978869, BG180159, AW967830, AI935417, AI741992, N21026, BF516218, AI435856, AA488922, AW967828, AW968651, BF514662, BE175744, BE296548, AA725895, BF515826, BF132005, AI743694, AI248795, AA682214, N53932, AI160081, BE175743, BF940732, AA806186, AA808294, AA581874, BF825333, W88973, AI057447, BG112400, AI240596, AI804003, BF439423, AA705427, W79026, AA194938, AA262401, AA485223, N54336, AA701482, AI192835, BE882217, AW977587, BE175765, AA459487, AA487727, AA258332, AA410401, AA195537, AI089098, AA253015, BF672536, AA700235, AA258496, BE931749, R70964, AA742366, AA634985, AW968652, AA406446, AA972891, AA280738, AW967829, AI417670, H61661, N32280, W88972, AA243614, AA612844, AA809932, AI753396, AA676538, R96589, AA488851, W78956, D81704, AA578562, AI937703, AV750774, R91659, AA243594, BE218227, BF592077, BF431663, BF107149, AI350939, AI240751, R96590, W80450, AA599959, H59035, BG223302, N68753, H60057, N91646, N24728, AA253027, BF531077, AW182249, AA262626, AW449085, AA665027, H59401, N36709, AW572357, AA484946, N20616, N44566, BE465244, AA419347, AA034295, D60390, AW770441, AA748357, BF086114, H59036, BE172157, AV727020, D60753, D29339, AA279489, AW973702, H58990, R66624, H78860, N22621, AL135138, D80043, AB037744, T50378, T51069, T87331, T87432, T80282, R16493, R16793, R16889, R16943, R20740, R22221, R22276, R27597, R27696, R34517, R36581, R36582, R39968, R43467, R49072, R49692, R52816, R52851, R49072, R43467, R43494, R20740, R46644, R39968, R49692, R62955, R63008, R66425, R66819, R67917, H21718, H27063, H30186, H42692, H39131, H43926, H44586, H46389, R99312, R99404, H64752, H64751, H84964, H97190, H64752, H97608, N26236, N28697, N33047, N33556, N41538, N42109, N70229, N79806, N98255, W01018, W19986, W44335, W44449, W81010, W81009, W90684, W90779, W99356, W99386, N90413, AA009837, AA010386, AA010322, AA019377, AA019378, AA026243, AA029623, AA033587, AA033588, AA056089, AA056148, AA079689, AA081447, AA081752, AA082528, AA084728, AA100074, AA100159, AA113183, AA127588, AA134510, AA156575, AA157284, AA161199, AA161200, AA181973, AA187561, AA226873, AA226833, AA233473, AA234238, AA235690, AA256297, AA256403, AA417901, AA418057, AA430035, AA430244, AA492600, AA279831, AA468684, AA506011, AA506624, AA514562, AA587048, AA595566, AA604178, AA631096, AA573619, AA575906, AA579642, AA565772, AA714575, AA730078, AA742696, AA765252, AA812238, AA826845, AA904238, AA918044, AA922424, AA923043,

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HUXAL63	945	1061790	1 - 3891	15 - 3905		U69567, AI125532, BF968973, BE890521, AF074692, BF968403, AW977280, BF111890, AV645725, BF797236, AW274041, BF002861, BF917447, AA434064, BG117266, AI559516, AU128956, AI569610, AV758189, BE047096, AW968976, BE044110, AW364486, BE842833, BF724803, AI041022, AW977686, AW188085, AW778740, AW471208, BF965471, AA058906, AW264922, AW936511, AA610288, BF102704, AI830921, AV750725, AI024731, W95811, BE885355, AI467943, W95857, AW474117, AA714833, AI332805, BF917665, W94729, W95818, AW276321, AA843441, AW473231, BF692464, AA725577, AI469526, AW301225, AI566211, AI376892, AI670697, AA827170, BF515424, AA043864, AW268885, AU157913, BF222606, AW304442, AW081224, AU139180, AW675227, AA936393, AI638422, N20661, AI632592, AI918739, AI446174, R70621, AW317070, BE148662, AW149140, AW592514, AI341172, BE045468, AI962441, AW580433, AW104291, AI963798, AA976362, AA627267, AW044184, AA884211, AA076173, AI687963, AW974151, AA927329, AW674700, N43830, AA489203, AI675470, AA706073, AA554058, AA043863, BE619745, D45459, AA128632, BF109435, BF198102, AA582316, AI689250, BG001662, AA075669, H88856, H05903, BF083956, AA960842, AW022044, H13597, H27633, AV682275, AA905245, AA588884, BF808593, F08282, F07961, F07955, AW028213, Z41033, D63110, AW196550, AA732684, AA055815, AA757169, AA504225, F04206, AW020016, T72574, AI364772, AV657834, AW385164, H88860, AA434339, BF083367, H88855,

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HLCLX57	946	106188 6	1 - 2115	15 - 2129	AW949360, AW316853, AW089870, AA424629, AI201957, AI694683, AI042413, AI208793, AA424584, AW468856, AW243593, AI689654, AI887451, AI078571, W47195, AI348627, BE180539, AI868956, AI685858, AA242894, W52204, BE710410, R72819, AW338772, BF944058, AI871541, AA304463, AI284275, BF851275, AA593283, AA897431, R73270, AA579833, AA852334, AA853717, H43839, BE711428, BE695310, W47310, AW025730, AA298143, C01723, BE167889, AA834168, AI307300, BE836337, BF990841, BE766647, BF964609, BG009975, AW983550, AA382523, S82451, AC005479, Z37976, AF004874, U35363, and Y12760.
HMALF63	947	106193 5	1 - 1152	15 - 1166	AI373162, AL514198, BE744468, BE315169, AI879055, BG259216, AL534521, AL538110, BE548233, BE292875, AL535782, AL537844, AL519121, BG257178, BE895302, BE742053, BG169655, BG171616, BE790421, AI929358, AL531286, AL536936, AL517674, BE292962, BF725367, BF036696, BE622359, BE888207, AL537997, AL516034, BE889487, BE783803, BE882945, BG256087, BE889516, AW160574, BG165025, BF796758, BE784053, BE884321, BG177421, BE782424, BE873426, BE869356, BE885292, BE962078, AL037933, AL535845, BE879051, AI972935, BF306804, BE890568, BE882612, AU119653, BG168428, BE694068, BE783985, BG256542, AL048676, AL514830, AU128858, BF979567, BG179671, AW630116, AL048687, AU143723, AW003255, BG260833, BE939927, AW997244, BE787270, W20127, AA494315, AI734206, AA314388, AW954925, BE834065, AW401695, AA100745, BE782385, AA227875, AW402291, BG105799, AI188082, AI124658, BE870935, AW161447, AA485855, BE620451, AA071213, N24322, AW006363, H17687, BE244817, AA687282, BE867557, BE879392, BG008774, AW470363, BE501063, BE538463, BE895265, BG006671, AI815719, H29212, AW407681, AA100530, AA830489, BF949434, BE618384, AW339931, R59748, AA830488, AA113090, R56388, AA171458, AV653142, AA718924, BF949844, BF949846, D82199, AA351640, BF822910, D82234, BG010445, AW872599, R23526, AA218685, BE896855, AA316126, H23018, R25573, AA219744, T27125, T66781, T80306, BF088864, H06138, R59636, BE244031, BF752472, AW872480, BE243908, AA352235, BG180676, BF949926, T65622, R56750, BE831546, F07306, AA316123, AA676374, AA609598, BF981271, W22104, AA769956, R19429, AW407586, AA332399, AA905754, R18170, BE872713, BE242892, BE814852, BF752477, BE780714, AA465039, AA307240, AA884536, AI969327, BE865926, R14049, AA137233, AA366276, AA360745, H05673, H06931, F11952,

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HACMR36	948	106205 7	1 - 2216	15 - 2230	AL514907, AL513615, BE790591, BE559884, BE793937, BE396311, BF314808, AU120211, BE871655, BF315412, BE312810, BG111263, BG249137, BG254548, BE783949, AW246222, BE253150, BE256829, BF196899, BE615313, BE615793, AV645348, AW249053, BE222572, AA582193, AI971522, AA633897, BE265100, BF062548, AW083860, AI146327, AI923961, AW027697, AW027689, AI679784, AI677984, BE223086, BE262799, AI860723, AW297187, AI553876, BF516242, AI524021, BF115386, BE205840, AI239829, AI677764, AA885076, BF588747, AI027576, AU144604, BF085665, AI811635, AA553825, AI971727, AI983956, AA211483, BF058201, AA599596, AI951110, BE266771, AA702849, AW166239, AA580220, AW248614, AI684649, BF941696, BE301721, AW169464, AA665482, AW304841, AW245146, AI004172, AW057556, BF108684, AA599674, AI672124, BF752889, R87478, AA216758, BF970240, AI204291, AI923433, BE926533, AI537686, R75912, AW732114, AI924338, AI291360, D31223, AA503759, AI394349, BG055744, AA317891, AA687790, H20155, BE255535, AI827071, BG057020, AI623743, BE645436, H64647, BF304487, H20249, H40207, AW503800, AU117909, BF205435, BF989017, BF997845, BF995585, BF204566, BF997846, BF989221, BF896934, BF995656, BF995504, BF995552, AW627631, AA776382, AI094448, AI919375, AA504325, BE298522, BE873199, BF346937, C14511, BF308581, H52717, AA917674, AI378986, BG029770, BE278600, AI696139, H52696, BG026227, BF725769, N40190, C14461, BF335338, AI559638, BF081784, C14410, BF981357, AI337287, D59458, H41559, BE857280, AI652150, AA553899, T12190, BF995508, AW005259, H40206, AA935183, AA585292, BF304742, AA664469, BF750859, BG222453, AW518325, H13363, AW074730, AI022018, AI908692, AW839602, AW628252, BF306336, AW839596, H30707, AA372402, C14497, AU128889, BE796866, H52973, AU123548, AA356031, AA809845, AU128801, D59779, AA218550, R88152, BG253048, BE548430, BF988348, AI924407, BG030548, BG259362, BF526001, BG122005, BG164994, BF971016, BG027631, BG250744, AI620284, BG252351, BF969798, BG027221, BG105848, BG259612, BG117545, BG108375, BG164495, BF793872, BF980532, BG166291, BF342312, BF344164, BF525514, BG259435, BG260963, BG028019, BG167415, BG179486, BG036520, BG169823, BG179183, BG170847, BG250790, BG105758, BF796661, BG178197, BG255566, BG248893, BG163974, BF347154, BG257498, BG167013, BF981953, BF793646, BG255388, BG256106, BF968284, BG167641, BF343702, AK001184, and AK000963.
HAOSM08	949	106207 9	1 - 2962	15 - 2976	AU122561, AU132527, BG252975, BF223038, AW960784, BG251220, BG120207, AI631712, AW003882, BF791715, BG117870, BG253108, BG029037, BG121891, BG252002, BE873094,

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HTEFM89	950	1062084	1 - 2874	15 - 2888	AL519991, AL534720, AL519990, AU137078, AL037563, BE887697, BE889066, BE882061, BE005854, BG032749, BF977511, BE904376, AV751904, BG258904, AV716107, AV651801, BE897653, AW958723, AV757537, AU157013, AI608790, BE892495, AA768118, AA460582, BF572668, AI096596, BF687508, BG256721, AA775502, AA451982, AW014146, N47947, AI685295, BF515596, AW770423, BE350955, AA444107, BE883684, AW503758, AW263530, AA461508, AI150229, AA446029, AA939060, AI375970, AI025102, AA446302, AA416943,

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HCHAK72	951	106212 3	1 - 2109	15 - 2123	AA534591, AW104113, BF435137, AA922301, AI978874, AA528179, AI251446, AW193752, AI469095, AI686794, AA883068, AW970064, AW970877, AW970564, AW973116, AW970958, AW975425, AI865738, AW975409, AW979140, AW975987, AW971963, AA410788, AW975012, AU147162, AW976003, AW971068, AW500684, AI755214, AA847499, AW976008, AI754567, AI733856, BG250286, AI754105, AW969933, AW576251, AW979200, AA832145, AI683116, AW970875, AW970030, BG180976, AA228778, AI923052, AW471332, AA225406, AV738383, AW969751, AW328331, BE178231, AW974932, AI056177, AV695478, AI249688, BF832074, BF828714, AI609972, AW615504, AW979284, AW023111, AL135377, AW468009, AI457597, BE178064, AI017251, AI669421, BF724372, AA176978, AI697425, AA704393, AV764259, BE042511, AA630854, BE970985, AV763540, BE062478, AI693979, AW958962, AA579152, AW272294, BF917486, AA524616, AA644090, BE138594, AL079734, AL118925, AW131356, AW979096, BF724838, AI537800, AU146620, AA610433, AA503019, AV762633, AA535216, AI687343, BE742024, AI038304, AI049955, BF870792, AW971097, BF854308, AA584484, AW975634, BF821897, AI635028, AU147839, AW576485, AA536040, AA456924, AV732038, AV763550, AI049630, AA568314, AA176604, AA169245, AW973992, AV761647, BF681619, AW265688, AA583386, AI887235, AI792464, AI569100, AW969753, BE062476, AW979159, AV759518, AI446452, BF247318, BF826830, AI345695, AW327624, AV755593, BG054730, AW192599, AV760508, AF201380, AC015555, AP001746, AP001623, AL442167, AL163285, AP001610, AP001609, AL031311, AC009364, AC005399, AC020904, AC011497, AC005953, AC004883, AL133545, U52111, AC003071, AP001718, AL109804, AC018643, AF243527, AF124523, Z84466, AL353802, AC003684, Z86090, AL049758, AC006480, AC004659, AC018641, AC006088, AL050335, AL035587, AC005821, AF146367, AC008812, AF134726, AC005225, Z93015, AL133453, AC068799, AC020916, AC005409, AC009155, AL080317, AL033529, AL132765, AC008264, AC011489, AL035450, AC002504, Z82206, AC024247, AJ009611, AL024498, AC005522, AL117333, AJ295844, AL049694, AC018738, AC005519, AC005231, AL121952, AL035659, AC005668, AC005048, AC007191, AC003070, AC010326, AP001748, AC007731, AL136303, AP002898, AC005500, AC006942, AC002492, AC011475, AC002310, AC005000, AC027319, AF111169, AD001502, AL117694, AL162272, AL138914, AC006994, AF030453, AP000144, AL117381, AL109967, AC004383, AP001435, AL031668, L78810,

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HPAME12	952	106213 9	1 - 4017	15 - 4031	AL520948, AL534150, BE379785, BE889460, AW951413, AI636742, BF109648, AW389540, AW157786, BF093583, AL534149, AA894354, AI928930, BE379858, AI809775, AW389539, AI340277, N98563, AL121544, AA643931, AI139344, N47725, AI475939, AA234514, AI191842, AI858268, AW163828, AI087225, AI054103, AI270307, AI929183, BF245490, H97227, BF690921, BF726007, BF086123, BF907543, BF089189, BF885026, BF885029, H26066, AI127553, BG167657, AA634930, BF885025, N32132, BF092903, F08681, BF885020, BF092933, AA635726, AL045202, BF885030, BE244005, BF377457, BF885023, BF086142, BF377423, BF092909, AI219134, AA298466, AA296906, AA953281, AI834343, AA657786, BF885024, AA658139, BF092910, BF092831, BF885015, AI795861, BF092892, BF092913, BF092893, BF377465, BF885027, H97226, BF885022, H03564, H03553, BF092854, C02607, BF092866, AA329567, BF092908, BF092850, H03474, BF885014, AA875932, BF092853, AI810192, N56801, BF092833, BF092858, W24246, BF092843, AI819883, BF092875, BF885018, Z40106, AW276669, BF756688, BF092904, BF092839, N47724, BF092845, AA376865, W87286, AA359837, BF377447, BE701352, BF092856, BF885005, and U34605.
HPCQK37	953	106226 0	1 - 1866	15 - 1880	AU120097, BE740116, AU121181, AI185118, BF981615, BG110591, BE546255, AL525287, BF312815, BG117879, BG032223, BE296715, BF313657, BE314543, BF980741, AA926785,

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HBCBE63	955	106232 8	1 - 1688	15 - 1702	BF125787, BE729903, AW578276, BF868558, BE407151, AW044387, AI348180, AA878114, AW663931, AW578277, AW510900, BF880313, AW340635, AI436687, AI143954, AI343602, AI357253, BE386970, AI343568, AI951064, AI916581, AA513427, AA639505, AW205284, AA863186, AA992690, AI272767, AA758554, AA886199, BE504318, AI308813, BE872847, AA313762, AI659827, BG055204, AI784443, BF572882, BF742211, AA324486, AA506764, BG015015, AA135374, BE827464, AF007170, AL162430, AK000220, and AB007921.
HSSJO19	956	106234 6	1 - 1463	15 - 1477	BF664489, BG025594, BG105829, BG025801, BF036169, AI582833, BE669616, AW297031, BF434005, AI348145, AW003926, AI609194, AA826364, AI342910, AA483510, AA693913, R15864, R15863, AI675022, R34440, BF941111, AW504856, AA903163, AW237128, AA935221, AA557314, AW139232, R48974, BE300179, AA700361, AA094807, AA502939, AI886280, AA187873, AW403759, AA187874, AW846045, W74137, AW732231, AW731970, AA383361, AI126180, AI697181, AW250863, AW250109, BE905310, BE739570, F22239, AI076622, AA938975, AI874254, AI401662, AU158593, BE549170, AI797537, AI126903, AI904336, AI904341, AA575960, AA947516, AA604706, AA313272, AW875275, AI905921, AW247859, AV731835, AA570611, AL110193, AC007842, AC003693, AC004616, AJ006345,

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HE8NQ23	957	106236 9	1 - 1776	15 - 1790	AI962439, AA424098, AA460529, AI968199, AI367723, AI969765, AI699236, AI206192, AL530798, AI697103, AF062006, AF061444, AF110818, and AX016185.
HTELJ95	958	106243 1	1 - 1647	15 - 1661	AU118298, BE739527, BE869231, BE739783, BG258670, AL047680, AU120304, BF207656, AW957634, BF692429, AU127515, BF666306, BF680361, BF692388, BF573293, BF208154, BF698175, BF666489, BF670276, BF698426, BF574553, BE379831, BF244412, BF211731, BF029813, BF244460, BF667117, AV711581, BF668580, BF184480, BF979219, BF694128, BF978578, BF979035, BF242514, BE379947, AW674926, BF668924, BF211442, AA085749, BE564271, AI161329, BF667604, AI458425, BF207943, BF027717, AV761666, BF028919, BE564668, BF668645, BF211078, BF700097, AV714512, BF208109, BF214772, BE566424, BF589406, AI220487, BF696815, BF245420, BE568677, BF061018, BE566650, BE866712, BF977541, BE566046, BF668139, BE569092, BF132230, BE379920, BG034292, AA312639, BF215159, BF215749, BF184533, BF700586, BF700982, BF697918, AU144893, AA935565, BE739263, BE960900, BF029561, BE379721, BF690901, BF214611, BF103768, AV704751, BF542116, BE739009, BF697833, BF590340, BE565639, AA160565, BE568609, BE970128, BF670029, BF664604, BE910213, BF029401, BF694228, BF029167, BF030210, AU150083, AA159916, AA505806, BF029651, BF244279, BF207497, BF666214, BF573752, BE972722, AW403249, BF027718, BF132908, BF576115, BF208561, BF669678, BE564803, BE568871, BF698949, AI671765, BE564945, BF240423, BF031415, AU146402, BE568687, BE564459, BF244906, AA954921, BF104963, AA128376, BF214943, BF184357, AI073761, AA947866, BF571840, BF677692, W07537, AA165026, AA805959, BF217335, AV661558, BF247837, BF217901, AI123292, BF675630, BF977328, AA825818, BE566776, AW674590, AA932330, BF130294, BE961174, AA810172, AA160253, H94797, AV739771, BF208724, BF574072, BF208041, BF030421, BF207805, BF131887, AA160252, BF570547, BE565834, BF571246, BE565094, C03597, BF029007, T19370, T78271, AA731306, BF695998, BE567717, AA907405, BE567475, N80741, C21337, AA147329, AA374477, BF241249, T78099, H48920, BF694245, BF246944, BE815523, BF028131, AA328225, BF246100, AA355205, AL047681, BF246005, AI719856, AI384085, N30715, BF214890, AV736109, AV742550, BF208176, AA774405, H48921, BF208535, BF217146, AV742551, BE855952, AW361432, N41329, BF209810, AA732085, BF208530, AA573751, BE326283, N56838, BF666070, BF671397, AI952391, AW797402, AW235332, AA328302, BF216221, BF209570, AA082421, N59836, AW391564, AV755858, AW973292, BF671547, AA186815, BF208983, BF242270, BF214287, BE565103, BF240920, AI732972, AI347472, AI791367, AA872247, BF208754, AA760959, AB006679, and AF027733.
HTPCP50	959	106243 5	1 - 2992	15 - 3006	AW959554, BE503321, BF439602, AA724866, AI241562, AI802994, BF679074, BF789905, W72803, AI024852, AI127443, W76329, AA429137, AA700716, AA487977, AW204065,

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HKGBU67	960	106249 6	1 - 765	15 - 779	BE537330, AI888137, AV701370, AU128929, BE613107, BE781577, AI672845, AW956358, BE962666, AI570562, AW440620, BF027216, AV701455, AA403116, BE612527, AI279867, AA418410, AW190186, BF794821, BE909695, AA401841, AU151145, AA905617, AW406511, AI798784, AA904054, AI401140, BF219013, AA887280, AI313194, AA081356, AI167620, AI018151, AI149369, AA593855, AI186137, AW070380, AA418507, BE958141, AA422027, AW136809, AI271520, AA833745, AA593915, AA461241, AI091023, AI672989, AA814928, N57462, W88723, AI285073, AI470105, AI476041, AI808738, AA639807, AV691385, AI023904, AV686945, AA025365, AA719755, W21365, T53949, BE547365, AA360441, AA338778, T55484, N29519, T55410, AA972490, AI968907, BE774710, AA356437, N93015, AA081355, AW137776, AA765233, AW795784, AA699446, W88724, BE502542, AI090475, AI913976, BF590992, AA872346, AA090282, AV712556, BE092555, AF016371, AF036331, and AL030995.
HFKIT82	961	106254 4	1 - 1848	15 - 1862	AW129420, AL526882, AI954625, BG252755, AW515637, AW002450, AI218958, AI075929, W72881, BE502304, BF344975, AI860065, AW510578, AI696337, BF341699, AA461147, AW772266, R14839, R14808, BF344755, AA666277, AI692833, W74406, BF108710, AI739359, H17173, BE883297, H51918, AI826180, BE463846, AW029326, AA903644, AA913932, AI623196, BF949967, AW294155, R18323, C06135, AI969803, W23997, AI652903, AI954650, AI970097, BF511055, T80549, BF361444, R11697, AA535279, AA019283, AA883986, AA054103, AL138095, AI905980, H83974, BG115528, AI201698, AI219898, BF949569, AW025845, AA679116, AW881802, AI910215, AA437196, AW593514, AC005754, AC008688, AC025436, AF152495, AF152496, AF152493, AC005752, AF152490, AF152491, AF152497, AF282973, AF217757, AC074130, AB046841, AF152502, AF217749, AR025266, AF152494, AF152501, AF152498, AL117449, AF152499, AF152528, AF152492, AF152500, AK024641, AF152489, AC020967, AC020974, AF131761, AK023190, AR025265, AK021915, AF152527, AC005618, AF152507, AF152318, AF152510, AF152323, AF152509, AF152508, AF152513, AF152322, AF152326, AR025269, AB002325, AF152515, AF152328, and D88795.
HE2LW42	962	106257 4	1 - 1288	15 - 1302	AL042644, AV753036, AI174720, AV727351, AA777328, AI268349, AV688028, AI292216, AV729489, H59650, AV693628, R53767, AA744996, AI342797, BF056041, AW590055, AI337141, W07248, AV749927, AW590523, BG015185, AV723467, AI064754, AA318543, AI689792, BE046799, W88477, AI240743, H87083, AA699845, BF927790, AV748261, AV747610, R97197, R91627, H91969, AW148855, R99163, N92066, BF895065, H71305,

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HOGCE44	963	106258 6	1 - 2812	15 - 2826	AL529207, AU131514, BF966725, AU118705, BG176867, BG260610, BF796807, AV725097, BG120210, BE890223, BE670805, BE891248, BG031774, BF691460, BE159045, BE159047, BF793410, BE620303, AI681703, AW857786, BE159033, BF968000, AU133714, BE694456, AW363349, AL133793, BE219535, BF976878, BF740139, AU145204, AI953648, BE892122, AA426391, BF881261, AU131939, BF083273, AW271550, AA599010, AW950106, AA932884, AI832044, BE620839, AI360263, AI332405, AL134494, BE218915, AW861560, AA489281, AU153590, AI480021, AI719025, AI554931, AA477783, AU154944, AA719830, BF038414, AI686963, BE813109, AW137641, BF081957, BF083263, AA829712, W00647, AW578909, AA836400, BF871460, AA305783, AV709911, BE895783, BE831167, AI041343, AW510304, BE702612, AI929319, AI718863, AA477395, AA477895, AW815726, AA045329, AA045387, W94959, R72051, AA486424, H08441, BF761351, BE936282, AA301683, AW118521, AI002196, AW613749, BF087893, T66094, R53499, F11788, AI868515, AA262364, AW802792, AI860943, AA372002, R53498, AW630161, AA341432, BF082195, AW842290, AW805858, H08727, BF748789, R73159, R09595, H82419, AW852196, BF920867, R73234, AA429305, AA994434, AI674319, N48502, AI526057, AW578911,

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HOVJJ72	964	1062626	1 - 2072	15 - 2086	BF685761, AI927486, BE781435, BE897367, BF437053, BE858728, BF348277, BG058683, AI674231, AI962534, BF726437, AI810612, AI923238, AW304824, AI338279, AW082888, BE257506, AA524737, AI539319, AI081760, AI138880, BF058141, AI565999, BF439557, AI680453, AI523996, AI342308, AW001338, AI952559, AA455886, AI421925, AI146722, AI274832, AI342562, BF128840, AV695313, AW205524, AI367531, AI263799, AI880114, AI798737, AI200656, AI650628, AI910869, AI674502, AI521083, AI925242, AI284195, BF129063, AI089196, AV693097, AI219515, AI880273, AW130599, BE677656, AA455883, AW079524, AI679856, AI865850, AA148540, BE503049, AA010344, AI679281, AI887554, AA632997, AI220656, AA194919, BF990462, AI634901, BF932272, AW188449, BF761164, AI808866, H26532, AI091957, R73631, AA134237, AI859881, AA194920, AA580244, AI194001, AA741176, AA832367, AI962066, BE938366, BE832299, AW190526, AI080370, AA777156, AA732832, AI185976, AA156632, H25720, AW190400, BF001400, AA400695, AI868623, R54677, AA148784, AI039261, W76189, BE938494, AW118247, AI581956, AV690144, AA743700, H40747, AL041507, AI278902, R66168, AW172445, AI199557, R54676, AW298684, H46427, AW242200, AW517309, BF115401, AI005082, AI243368, AI263274, AI563963, AI817986, AI365561, BE672981, AI494458, AI243614, AI365570, BF850280, AI538466, AA452870, AI580973, AA742664, AA864796, AI190958, BE677499, BF929130, N95346, AA705811, AI346405, AI589753, W72018, AI690402, AV691082, AV693294, AV688786, AV694416, AA913716, AA905648, R00343, N89911, AA993262, AV684738, AA918430, AI371509, AV686967, AI015415, H27241, N35381, AI089208, W72295, AA010345, AW196950, W72990, R50392, AA134236, AI825465, AW241576, R48919, AV692353, AI521081, AA150448, AV684528, AA411769, R48807, AA885408, AI932574, BF886497, H28547, AI884711, W76321, AI971315, W07358, BF447545, H26623, AI863830, BF794570, H46665, BG152791, BE616297, AI370906, R67050, BF360816, BF001377, BF476577, AI453016, AA877349, AI129195, H28546, R87406, AA736760,

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HODBT14	965	1062628	1 - 617		15 - 631	AV683488, AV652792, AV655669, AV698583, AV709265, AV688150, AV709232, AW962407, AV704853, AV729519, AV701525, AV697895, AV727101, AV695545, AV721972, AV704541, AV708440, AV705159, AV703106, AV705727, AV705611, AV707140, AV686405, AV702065, AV690209, AV707097, AW951773, AV725273, AV726103, AW952064, AV726716, AV706761, AW951711, AV731018, AV725697, AV758698, AV726503, AV707878, AV706975, AV704547, AV647006, AV702681, AV756755, AV706584, AV692600, AW950529, AV709987, AV686390, AV706443, AW963660, AV711518, AV703158, AV706893, AV704551, AV727015, AV713128, AW955616, AV703830, AV703715, AW964540, AV762343, AW954994, AV702296, AV707146, AV654711, AV649625, AW952328, AW958280, AV707733, AV726261, AV658334, AW963378, AV683053, AW950597, AI525316, AV693768, AW960237, AV705959, AV658770, AV728965, AW956619, AW952743, AV688407, AV703992, AV693604, AW957110, AV702298, AV695489, AV756799, AV728446, AV705216, AV708850, AV686420, T18597, AV758892, AV686100, AV695752, AV723685, AV726091, AV701545, AV649299, AV705520, AV709235, AV649305, AV709040, AV727828, AV689804, AV684811, AV687015, AV685675, AV693000, AW957853, AV727221, AV707236, AV691786, AW965813, AV755725, AV702515, AV703855, AV709141, AV685456, AV697039, AV647390, AV727052, AV694684, AV704973, AV726613, AV691080, AV728901, AW955713, AW958163, AW953802, AV727381, AW951707, AV727916, AW959366, AV701872, AV661369, AW953611, AW959994, AV706272, AV707217, AV705331, AW950047, AV763447, AV651519, AV706448, AV701751, AW960040, AV725375, AV728467, AV658299, AV683002, AW951184, AV694674, AV705909, AV691211, AV701754, AV724867, AV726362, AV693727, AV702172, AV651719, AV707359, AV704785, AV703460, AV710111, AV705319, AV684962, AV652528, AV704891, AV702277, AW958763, AV703821, AV705998, AV705777, AV653766, AW960658, AV684731, AV707631, AV726938, AA824604, AW959346, AV698400, AV725054, AW945144, AW963940, AV707572, AW962651, AW962388, AW960458, AV728853, AV694386, AW953645, AW953691, AW964673, AV707650, AV702947, AV688658, AW955708, AV697880, AV703978, AW958102, AV695359, AW960830, AV729348, AV705869, AV725948, AW951291, AW957533, AV684214, AV704392, AW949779, AL109758, L13858, AR061133, U94592, AX047064, Y09813, AX047063, A70869, AX047062, AF006072, AX009343, AX009341, AX009337, AX009335, AX009345, AX009342, AX009344, AX009340, AX009339, AX009336, AX009338,

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HBOEB83	966	106262 9	1 - 1380	15 - 1394	BF755445, W07601, BF843629, BF364932, BF840131, AA378282, R57499, AW384132, BF945921, BF943555, AA092071, Z19585, AF102887, X89963, AF152393, and L27263.
HODCT96	967	106263 1	1 - 529	15 - 543	BE064551, BF086062, BF893169, AK023721, D70831, AC010620, AC024563, AC012627, AC008990, AC004004, AB040906, AC011494, AC007204, AC008463, AC010329, M55422, AC011477, AC003973, and AC011493.
HTXJE60	968	106265 5	1 - 1550	15 - 1564	BF038124, BG171051, AW749929, AV732956, BE885891, BG119342, AW959370, BE384272, BF669153, BE410276, BE547057, BF514058, AV716716, BF666034, AW247514, BF243382, BF571380, N98593, AW361781, AA461153, BE409941, BF680949, R11877, H18036, AV682204, N36690, AA214548, H58648, AA584425, AW245099, AI192476, AI374760, W31019, AI086429, AI300181, R61663, R17754, AI376885, BF673383, AI199359, R17219, N24708, AA479642, AA291204, AA405250, AA629554, BF933763, AA362535, AA291660, AA745817, R67822, AA477330, AA213533, N79116, AW072748, AI262159, AI000698, AI936072, AA772228, AW992044, N54671, AW090390, BG230587, BF477852, AA973898, AW450684, AI632973, AK024756, and AJ239531.
HUSIQ62	969	106267 9	1 - 1231	15 - 1245	AL527804, AL527803, AU133250, AL531642, AL531641, BG024567, BE409577, BE275235, BE900374, BE407097, BG110484, BG177580, BE733601, BF794754, BF796438, AU129699, BG257211, BF795405, BE277114, BF972712, AI207460, BE537036, BF976291, AW958534, AI802428, BG177394, BG113805, AI133236, BG180769, BG107198, BF981756, AV717659, AU129620, BE391607, AW951026, BE904310, BE255557, BG036677, BE252235, BE900713, BE408445, BE926573, BE782089, BG106443, BE389138, BE884653, BE279526, BE539248, BF685431, BF213044, BE885774, AW673780, AW204191, AW936182, BF035534, AW936216, AW936154, BF797205, BE540934, AI204084, BE386536, BE296097, AI798235, AW593018, AI017913, AI798966, BF000818, AW250100, AW799320, AI523803, AW582711, BF064032, AW571487, AW167852, AW327724, BF974778, AV754043, BE888728, BE394509, BF663406, AW605135, AA714394, BF912862, BE394384, AW936161, AW799305, BF683464, AU151712, BE394533, BG059618, BF184313, BE388631, BF211439, BE047170, AW605184, N31851, AU154621, AW291824, BF238052, BE882796, AW468394, AI831782, AW246077, AW440973, BE390283, AI954999, AW803951, AI380618, BE645929, AI434252, AI338618, AI369130, AA580516, AI373115, AI738431, AI336359, BE566233, AW327783, AI683060, BE885950, AW404086, AI242410, AW152603, AW473412, AI432821, AI954175, BF028000, AI745038, AI905275, AA807713, AW605160, BF095616, AI126474, BF184229, AI270212, AI022067, AA806501, BE777563, W60824, AA629547, BE221418, AW674103, AA187362, AI355746, AI570979, N23950, AI033448, AA868159, AA766119, AA954820, BF913491, AA521127, AV714125, AW002354, AI355783, AA731362, AW608831, AW665939, AW406422, BE535671, AA969082, AW866948, W68241, BE328028,

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HPCTC48	970	106268 6	1 - 1099	15 - 1113	AL518312, BE876206, BG249252, AW965671, BG117042, BF242380, AW965669, BF541503, BF214421, AI990836, BF030816, BF475708, AI360210, AW118735, AW241585, BF852809, AA159926, AI671624, AI918769, AA668872, AI129365, BF002990, AI570207, AI921845, AA759100, AA608962, AI480175, AA534338, AA622034, AA128382, AW511429, BF244063, AW014932, BE350318, AW191019, AI632581, BF590946, BE551547, AI864862, AA962714, AI809654, AA195594, AW591626, AI917844, AW274989, BF574216, AA458988, AA564992, AW243373, AI244452, BE349611, F34378, AA459203, AV708611, AI239924, AA287277, BF672808, AA604658, AW675711, AA147341, BE865967, BG057896, D59283, AI962921, AW780340, AV708614, BE672924, H77893, AA191343, AA810152, BF675349, BE565472, AW024311, AW901422, BF852230, AV757324, AI368536, AW338999, AI619533, BF375145, AI701851, AA936959, BE618592, AA253008, AL518313, AI274509, AW904157, T35346, AW888698, T33750, AV682653, AI926285, BE706231, AW904146, Z42909, BE880505, AI366371, AA165037, AA626230, BF698473, N72642, AI761817, AW573584, N63390, AA629849, BE699232, AI832841, BF063350, AA852076, AV756635, AA194959, AV713926, BE565910, BF103813, AA069322, BE699283, BF669833, BF103883, BG256173, AA253132, AA287427, BG108565, N56321, BE958352, AW304692, AA659675, BF029358, AW337940, AA356559, BG249403, AW578864, AW904646, BF378777, AI860409, AW138982, BE172110, N58731, BF819096, BF058158, AW857007, AW371763, C00473, W27589, BE257642, BF514579, BG255384, BE765235, BE256501, BE889415, BE881408, BF081300, BG163413, AX018191, AL035305, AF314752, AX018169, Z99127, AF057356, AF275803, and U97327.
HKBAK29	971	106271 8	1 - 2308	15 - 2322	BE886739, BE379712, BG168115, BE738372, BE896807, BG025579, BF205840, AV713523, BE748565, BG256937, BF793599, AV715761, BG106972, BF695583, BE739467, BF239177,

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HPMCX26	972	106274 3	1 - 669	15 - 683	BE006225, BF038302, AA368470, AI820542, BF996462, BG010637, T64506, BF767592, BF830211, T93730, AC002073, AL117466, D45906, AB005131, U88618, AB008117, AB005132, D31874, D31875, D31876, D31877, AB005135, and D85527.
HFKHF51	973	106278 5	1 - 2428	15 - 2442	BE746374, AI743383, AI189480, AV728988, BE899408, BE562186, BE746781, BE561742, AV722367, BF347181, BE294788, BF530313, BE297333, BE397775, BF309493, BE268309, AI952007, BE743200, BE299126, AW952382, AW571554, AW130259, AW269905,

					AW268367, BF310849, AI400646, BE857180, AI039861, AA639694, BF507388, AA994030, BF434700, AI056993, AW469101, AI280124, AW087805, AI040027, BF305457, AI095733, AA843902, AI813888, BF527954, AW043686, BE222971, AI018251, BE019740, BF727202, AW001144, AI184877, AA977540, AI221461, BF058113, AI744692, AA939338, BF058488, BE327064, AI631591, BF060991, AA884553, AI188291, BF111321, AW078707, AW300196, AI354719, AI362107, AA601020, AW239541, BF307205, AI961777, AA620650, AI971518, AA782108, AW468853, Z98493, AI123005, AI281234, AI371785, AI042264, Z98494, AI907175, BF945716, AA037644, AI983407, AI291368, AI189906, AI696796, AI805625, AI193049, AW068434, AA654142, AA028948, AI192226, AA424708, W86749, H18114, AA035346, BE902648, AW075664, AI085855, N50916, BF868739, BG152447, BF931509, AA137064, BF940371, AA584282, AI147886, AA082844, W65336, H03762, BF923686, AA621825, AI298050, R55061, AW068276, AA885454, AA954337, AA028947, BF929294, R48880, H50357, AA613635, BF871643, W96508, AV721662, AI991634, BF740062, AW051544, N26167, R74334, BF594397, W65306, N71800, AW067959, BE206342, H27911, AI750973, AA137135, N50788, AA984404, AA236213, AW015653, BF923702, AI744638, AV723825, AA419024, W35175, AA984360, R68793, AI741716, AI742212, R69300, N26168, R48488, AI991641, H02866, AI142695, AI468487, AA295172, H42461, T48913, R69284, R55030, AA668542, AA452705, H14200, AA022527, AI219145, AI475336, R48489, H18159, AI219092, R25771, R74427, H46438, AW014159, R69301, AW733005, BF357697, R69285, BF928802, AW444859, AA989514, H43664, BE702963, W87321, AA295171, T48912, AA904744, AI272234, W20398, AI085799, BF514530, AA083138, R48776, AA377483, R26607, AW581330, D59307, T12571, H42862, H44735, BF997408, AA358896, W96475, AV751736, BG014799, AI185266, H50395, AW068024, BE294110, BF932203, BF956105, N55145, AI915948, R73224, AA037643, AW834928, AA450064, AA236214, AA975214, BF941646, AW244038, BG007442, AA022459, R25786, AW578281, AW966531, AW978634, AV724520, AV699550, D58283, AV718692, AW975618, AV718489, AV699927, AW966053, AF177203, AB040935, AF218016, AC006312, AX047063, AX033851, A62298, A84916, A62300, AX027925, X67155, AR070327, AJ302649, AX047064, AX047062, AJ132110, AX020191, A67220, AX020190, AX021518, A25909, D26022, D34614, A78862, D89785, Y17188, AR018138, AR025207, AR092424, AX035434, X68127, D88547, X82626, AJ294956, AF058696, AB012117, AR088705, AF260572, AR008278, A85396, AR074141, AR066482, AX042372, A85477, AB028859, A86792, AR087649, X93549, AX015396, AX028130, I19525, AF135125, A82595, AJ287395, Y12724, AR074545, A44171, A30438, AR016808, AB037923, A94995, AR060385, AB002449, AR064240, I50126, AR008443, U79457, Y17187, I50132, I50128, I50133, AR066488, AR016514, AR060138, A45456, A26615, AR052274, AR008277, AR008281, AX035429, AX035428, AX035426, Y09669, AR074139, A43192, A43190, AR038669, AR066487, AR074136, D88507, X64588, AR066490, AR054175, I14842,

						AR016691, AR016690, U46128, D50010, I18367, AB033111, A63261, A70867, AR008408, AR091537, S69292, AR062872, Z32749, AR093385, I18371, X89963, D13509, A64136, A68321, AR060133, AR087528, A43601, I79511, S78798, U87247, AB023656, AF123263, AR032065, X98248, X93535, AR037157, AR008382, AA234577, and T19874.
HUCPE28	974	106279 5	1 - 1076	15 - 1090		BE798851, AI762558, BE258902, BE251817, BE545676, AW967970, AW274241, BE855533, BE855590, AW242945, BF951715, AW027116, AI738977, AI097099, AI831606, AI935304, AI057522, AA243829, AW574617, AI361028, AI146329, AW275358, AI092427, AI089701, AI523606, AI097597, AI521322, AW511172, AI168266, AI807825, AI524209, AW138290, AI660227, AI161303, AA954679, AI081418, BE502552, AI637508, AW137455, AI160335, AI523835, AI418882, AI076040, AA679406, AA855022, AW137563, AI018528, AW006211, AI027541, AW027121, AA994592, AI269258, AW135845, AA810915, BE857947, AI198243, AA455694, AA243750, AI698633, AA262194, AI537870, AW005460, AI651177, H87087, AI937020, AA873171, AA633518, AA835701, BF063722, AA765735, AI382433, AI039147, AI695656, AA813862, BE274246, AA846127, AA916726, AA749308, AA834567, AA766859, AA744763, AA884673, AW404490, R46413, AA764951, BG001430, AW138380, BE549583, AC008762, and AA808479.
HPWAH30	975	106284 0	1 - 817	15 - 831		AV755078, AU123448, AU143734, AU123664, BF797755, AI792344, AI566486, AW503073, BE064551, AV704018, BE396253, AU132789, AI733621, AA209235, BE897039, AV714960, AL042967, BF921029, BF699661, BF056061, BF749681, BG027032, AW976399, AW384427, AW859939, BE870310, BF773250, T47250, BF817669, AI554749, AA768909, AI744718, BE177809, AW272732, AW384913, N98899, AA397793, AI476267, AA743098, AA309966, BF749053, BF749575, AA976492, AI680077, AW502863, BE694276, BF240985, AU160228, T05813, AA480353, BF376299, BE177796, AA205471, BF748343, AA587596, BF921199, BE700971, AW105262, BF796887, AI718402, AA351793, AI280287, AA351526, AI049550, BF817370, AI241755, BE177799, BF751655, AA974841, BE694240, AW392975, AI042041, AW869565, T07738, AA352999, AW241205, T06856, AW887346, BE775238, BF247382, BE082118, L11672, AC016628, AC010329, AC021090, AC010620, AC012627, AC011477, AK023721, AC008554, AF070651, AC073539, AC011494, AC008626, X59244, AC022432, AC010636, AB040906, AC008739, AC024563, D70831, AC008463, X78932, AC008990, M27879, U35376, AB027251, AC011493, AC003973, AC008981, AC007204, AC011482, M55422, AC078899, Z96138, AL136969, AC004004, AL138715, AC006457, Z95704, AP000541, AC009006, L15309, AC006455, AC006539, AK022550, AJ239321, AL163202, AF242519, AF054180, AF003540, AC000378, AC002519, U09847, AC025731, and AF038951.

TABLE 4

Code	Description	Tissue	Organ	Cell Line	Disease	Vector
AR022	a Heart	a Heart				
AR023	a Liver	a Liver				
AR024	a mammary gland	a mammary gland				
AR025	a Prostate	a Prostate				
AR026	a small intestine	a small intestine				
AR027	a Stomach	a Stomach				
AR028	Blood B cells	Blood B cells				
AR029	Blood B cells activated	Blood B cells activated				
AR030	Blood B cells resting	Blood B cells resting				
AR031	Blood T cells activated	Blood T cells activated				
AR032	Blood T cells resting	Blood T cells resting				
AR033	brain	brain				
AR034	breast	breast				
AR035	breast cancer	breast cancer				
AR036	Cell Line CAOV3	Cell Line CAOV3				
AR037	cell line PA-1	cell line PA-1				
AR038	cell line transformed	cell line transformed				
AR039	colon	colon				
AR040	colon (9808co65R)	colon (9808co65R)				
AR041	colon (9809co15)	colon (9809co15)				
AR042	colon cancer	colon cancer				
AR043	colon cancer (9808co64R)	colon cancer (9808co64R)				
AR044	colon cancer 9809co14	colon cancer 9809co14				
AR045	corn clone 5	corn clone 5				
AR046	corn clone 6	corn clone 6				
AR047	corn clone2	corn clone2				
AR048	corn clone3	corn clone3				
AR049	Corn Clone4	Corn Clone4				
AR050	Donor II B Cells 24hrs	Donor II B Cells 24hrs				
AR051	Donor II B Cells 72hrs	Donor II B Cells 72hrs				
AR052	Donor II B-Cells 24 hrs.	Donor II B-Cells 24 hrs.				
AR053	Donor II B-Cells 72hrs	Donor II B-Cells 72hrs				
AR054	Donor II Resting B Cells	Donor II Resting B Cells				
AR055	Heart	Heart				
AR056	Human Lung (clonetech)	Human Lung (clonetech)				
AR057	Human Mammary (clontech)	Human Mammary (clontech)				
AR058	Human Thymus (clonetech)	Human Thymus (clonetech)				
AR059	Jurkat (unstimulated)	Jurkat (unstimulated)				
AR060	Kidney	Kidney				
AR061	Liver	Liver				
AR062	Liver (Clontech)	Liver (Clontech)				

AR063	Lymphocytes chronic lymphocytic leukaemia	Lymphocytes chronic lymphocytic leukaemia				
AR064	Lymphocytes diffuse large B cell lymphoma	Lymphocytes diffuse large B cell lymphoma				
AR065	Lymphocytes follicular lymphoma	Lymphocytes follicular lymphoma				
AR066	normal breast	normal breast				
AR067	Normal Ovarian (4004901)	Normal Ovarian (4004901)				
AR068	Normal Ovary 9508G045	Normal Ovary 9508G045				
AR069	Normal Ovary 9701G208	Normal Ovary 9701G208				
AR070	Normal Ovary 9806G005	Normal Ovary 9806G005				
AR071	Ovarian Cancer	Ovarian Cancer				
AR072	Ovarian Cancer (9702G001)	Ovarian Cancer (9702G001)				
AR073	Ovarian Cancer (9707G029)	Ovarian Cancer (9707G029)				
AR074	Ovarian Cancer (9804G011)	Ovarian Cancer (9804G011)				
AR075	Ovarian Cancer (9806G019)	Ovarian Cancer (9806G019)				
AR076	Ovarian Cancer (9807G017)	Ovarian Cancer (9807G017)				
AR077	Ovarian Cancer (9809G001)	Ovarian Cancer (9809G001)				
AR078	ovarian cancer 15799	ovarian cancer 15799				
AR079	Ovarian Cancer 17717AID	Ovarian Cancer 17717AID				
AR080	Ovarian Cancer 4004664B1	Ovarian Cancer 4004664B1				
AR081	Ovarian Cancer 4005315A1	Ovarian Cancer 4005315A1				
AR082	ovarian cancer 94127303	ovarian cancer 94127303				
AR083	Ovarian Cancer 96069304	Ovarian Cancer 96069304				
AR084	Ovarian Cancer 9707G029	Ovarian Cancer 9707G029				
AR085	Ovarian Cancer 9807G045	Ovarian Cancer 9807G045				
AR086	ovarian cancer 9809G001	ovarian cancer 9809G001				
AR087	Ovarian Cancer 9905C032RC	Ovarian Cancer 9905C032RC				
AR088	Ovarian cancer 9907 C00 3rd	Ovarian cancer 9907 C00 3rd				
AR089	Prostate	Prostate				
AR090	Prostate (clonetech)	Prostate (clonetech)				
AR091	prostate cancer	prostate cancer				
AR092	prostate cancer #15176	prostate cancer #15176				
AR093	prostate cancer #15509	prostate cancer #15509				

AR094	prostate cancer #15673	prostate cancer #15673				
AR095	Small Intestine (Clontech)	Small Intestine (Clontech)				
AR096	Spleen	Spleen				
AR097	Thymus T cells activated	Thymus T cells activated				
AR098	Thymus T cells resting	Thymus T cells resting				
AR099	Tonsil	Tonsil				
AR100	Tonsil geminal center centroblast	Tonsil geminal center centroblast				
AR101	Tonsil germinal center B cell	Tonsil germinal center B cell				
AR102	Tonsil lymph node	Tonsil lymph node				
AR103	Tonsil memory B cell	Tonsil memory B cell				
AR104	Whole Brain	Whole Brain				
AR105	Xenograft ES-2	Xenograft ES-2				
AR106	Xenograft SW626	Xenograft SW626				
H0002	Human Adult Heart	Human Adult Heart	Heart			Uni-ZAP XR
H0003	Human Adult Liver	Human Adult Liver	Liver			Uni-ZAP XR
H0004	Human Adult Spleen	Human Adult Spleen	Spleen			Uni-ZAP XR
H0006	Human Frontal Lobe of Brain					Uni-ZAP XR
H0007	Human Cerebellum	Human Cerebellum	Brain			Uni-ZAP XR
H0008	Whole 6 Week Old Embryo					Uni-ZAP XR
H0009	Human Fetal Brain					Uni-ZAP XR
H0010	Human Fetal Hepatic	Human Fetal Liver	Liver			Uni-ZAP XR
H0011	Human Fetal Kidney	Human Fetal Kidney	Kidney			Uni-ZAP XR
H0012	Human Fetal Kidney	Human Fetal Kidney	Kidney			Uni-ZAP XR
H0013	Human 8 Week Whole Embryo	Human 8 Week Old Embryo	Embryo			Uni-ZAP XR
H0014	Human Gall Bladder	Human Gall Bladder	Gall Bladder			Uni-ZAP XR
H0015	Human Gall Bladder, fraction II	Human Gall Bladder	Gall Bladder			Uni-ZAP XR
H0016	Human Greater Omentum	Human Greater Omentum	peritoneum			Uni-ZAP XR
H0018	Human Greater Omentum, fII remake	Human Greater Omentum	peritoneum			Uni-ZAP XR
H0019	Human Fetal Heart	Human Fetal Heart	Heart			pBluescript
H0020	Human Hippocampus	Human Hippocampus	Brain			Uni-ZAP XR
H0021	Human Infant Adrenal Gland	Human Infant Adrenal Gland	Adrenal gland			Uni-ZAP XR
H0022	Jurkat Cells	Jurkat T-Cell Line				Lambda ZAP II
H0023	Human Fetal Lung					Uni-ZAP XR
H0024	Human Fetal Lung III	Human Fetal Lung	Lung			Uni-ZAP XR
H0025	Human Adult Lymph Node	Human Adult Lymph Node	Lymph Node			Lambda ZAP II
H0026	Namalwa Cells	Namalwa B-Cell Line, EBV immortalized				Lambda ZAP II
H0028	Human Old Ovary	Human Old Ovary	Ovary			pBluescript
H0029	Human Pancreas	Human Pancreas	Pancrea			Uni-ZAP XR

			s			
H0030	Human Placenta					Uni-ZAP XR
H0031	Human Placenta	Human Placenta	Placenta			Uni-ZAP XR
H0032	Human Prostate	Human Prostate	Prostate			Uni-ZAP XR
H0033	Human Pituitary	Human Pituitary				Uni-ZAP XR
H0034	Human Parathyroid Tumor	Human Parathyroid Tumor	Parathyroid		disease	Uni-ZAP XR
H0035	Human Salivary Gland	Human Salivary Gland	Salivary gland			Uni-ZAP XR
H0036	Human Adult Small Intestine	Human Adult Small Intestine	Small Int.			Uni-ZAP XR
H0037	Human Adult Small Intestine	Human Adult Small Intestine	Small Int.			pBluescript
H0038	Human Testes	Human Testes	Testis			Uni-ZAP XR
H0039	Human Pancreas Tumor	Human Pancreas Tumor	Pancreas		disease	Uni-ZAP XR
H0040	Human Testes Tumor	Human Testes Tumor	Testis		disease	Uni-ZAP XR
H0041	Human Fetal Bone	Human Fetal Bone	Bone			Uni-ZAP XR
H0042	Human Adult Pulmonary	Human Adult Pulmonary	Lung			Uni-ZAP XR
H0044	Human Cornea	Human Cornea	eye			Uni-ZAP XR
H0045	Human Esophagus, Cancer	Human Esophagus, cancer	Esophagus		disease	Uni-ZAP XR
H0046	Human Endometrial Tumor	Human Endometrial Tumor	Uterus		disease	Uni-ZAP XR
H0047	Human Fetal Liver	Human Fetal Liver	Liver			Uni-ZAP XR
H0048	Human Pineal Gland	Human Pineal Gland				Uni-ZAP XR
H0049	Human Fetal Kidney	Human Fetal Kidney	Kidney			Uni-ZAP XR
H0050	Human Fetal Heart	Human Fetal Heart	Heart			Uni-ZAP XR
H0051	Human Hippocampus	Human Hippocampus	Brain			Uni-ZAP XR
H0052	Human Cerebellum	Human Cerebellum	Brain			Uni-ZAP XR
H0053	Human Adult Kidney	Human Adult Kidney	Kidney			Uni-ZAP XR
H0054	Human Corpus Colosum	Human Corpus Callosum	Brain			pBluescript
H0056	Human Umbilical Vein, Endo. remake	Human Umbilical Vein Endothelial Cells	Umbilical vein			Uni-ZAP XR
H0057	Human Fetal Spleen					Uni-ZAP XR
H0058	Human Thymus Tumor	Human Thymus Tumor	Thymus		disease	Lambda ZAP II
H0059	Human Uterine Cancer	Human Uterine Cancer	Uterus		disease	Lambda ZAP II
H0060	Human Macrophage	Human Macrophage	Blood	Cell Line		pBluescript
H0061	Human Macrophage	Human Macrophage	Blood	Cell Line		pBluescript
H0062	Human Thymus	Human Thymus	Thymus			Uni-ZAP XR
H0063	Human Thymus	Human Thymus	Thymus			Uni-ZAP XR
H0065	Human Esophagus, Normal	Human Esophagus, normal	Esophagus			Uni-ZAP XR
H0067	Human left hemisphere, adult	Human Left Hemisphere, Adult	Brain			Lambda ZAP II
H0068	Human Skin Tumor	Human Skin Tumor	Skin		disease	Uni-ZAP XR
H0069	Human Activated T-Cells	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0070	Human Pancreas	Human Pancreas	Pancreas			Uni-ZAP XR
H0071	Human Infant Adrenal	Human Infant	Adrenal			Uni-ZAP XR

	Gland	Adrenal Gland	gland			
H0073	Human Leiomyeloid Carcinoma	Human Leiomyeloid Carcinoma	Muscle		disease	Uni-ZAP XR
H0074	Human Platelets	Human Platelets	Blood	Cell Line		Uni-ZAP XR
H0075	Human Activated T-Cells (II)	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0077	Human Thymus Tumor	Human Thymus Tumor	Thymus		disease	Lambda ZAP II
H0078	Human Lung Cancer	Human Lung Cancer	Lung		disease	Lambda ZAP II
H0079	Human Whole 7 Week Old Embryo (II)	Human Whole 7 Week Old Embryo	Embryo			Uni-ZAP XR
H0080	Human Whole 6 Week Old Embryo (II)	Human Whole Six Week Old Embryo	Embryo			Lambda ZAP II
H0081	Human Fetal Epithelium (Skin)	Human Fetal Skin	Skin			Uni-ZAP XR
H0082	Human Fetal Muscle	Human Fetal Muscle	Sk Muscle			Uni-ZAP XR
H0083	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Jurkat Cells				Uni-ZAP XR
H0084	Human Namalwa Membrane Bound Polysomes	Namalwa Cells				Uni-ZAP XR
H0085	Human Colon	Human Colon				Lambda ZAP II
H0086	Human epithelioid sarcoma	Epithelioid Sarcoma, muscle	Sk Muscle		disease	Uni-ZAP XR
H0087	Human Thymus	Human Thymus				pBluescript
H0090	Human T-Cell Lymphoma	T-Cell Lymphoma	T-Cell		disease	Uni-ZAP XR
H0092	Human Pancreas Tumor	Human Pancreas Tumor	Pancreas		disease	Uni-ZAP XR
H0093	Human Greater Omentum Tumor	Human Greater Omentum	peritoneum		disease	Uni-ZAP XR
H0095	Human Greater Omentum, RNA Remake	Human Greater Omentum	peritoneum			Uni-ZAP XR
H0096	Human Parotid Cancer	Human Parotid Cancer	Parotid		disease	Lambda ZAP II
H0097	Human Adult Heart, subtracted	Human Adult Heart	Heart			pBluescript
H0098	Human Adult Liver, subtracted	Human Adult Liver	Liver			Uni-ZAP XR
H0099	Human Lung Cancer, subtracted	Human Lung Cancer	Lung			pBluescript
H0100	Human Whole Six Week Old Embryo	Human Whole Six Week Old Embryo	Embryo			Uni-ZAP XR
H0101	Human 7 Weeks Old Embryo, subtracted	Human Whole 7 Week Old Embryo	Embryo			Lambda ZAP II
H0102	Human Whole 6 Week Old Embryo (II), subt	Human Whole Six Week Old Embryo	Embryo			pBluescript
H0103	Human Fetal Brain, subtracted	Human Fetal Brain	Brain			Uni-ZAP XR
H0105	Human Fetal Heart, subtracted	Human Fetal Heart	Heart			pBluescript
H0107	Human Infant Adrenal Gland, subtracted	Human Infant Adrenal Gland	Adrenal gland			pBluescript

H0108	Human Adult Lymph Node, subtracted	Human Adult Lymph Node	Lymph Node			Uni-ZAP XR
H0109	Human Macrophage, subtracted	Macrophage	Blood	Cell Line		pBluescript
H0110	Human Old Ovary, subtracted	Human Old Ovary	Ovary			pBluescript
H0111	Human Placenta, subtracted	Human Placenta	Placenta			pBluescript
H0112	Human Parathyroid Tumor, subtracted	Human Parathyroid Tumor	Parathyroid			pBluescript
H0113	Human skin Tumor, subtracted	Human Skin Tumor	Skin			Uni-ZAP XR
H0116	Human Thymus Tumor, subtracted	Human Thymus Tumor	Thymus			pBluescript
H0117	Human Uterine Cancer, subtracted	Human Uterine Cancer	Uterus			pBluescript
H0118	Human Adult Kidney	Human Adult Kidney	Kidney			Uni-ZAP XR
H0119	Human Pediatric Kidney	Human Pediatric Kidney	Kidney			Uni-ZAP XR
H0120	Human Adult Spleen, subtracted	Human Adult Spleen	Spleen			Uni-ZAP XR
H0121	Human Cornea, subtracted	Human Cornea	eye			Uni-ZAP XR
H0122	Human Adult Skeletal Muscle	Human Skeletal Muscle	Sk Muscle			Uni-ZAP XR
H0123	Human Fetal Dura Mater	Human Fetal Dura Mater	Brain			Uni-ZAP XR
H0124	Human Rhabdomyosarcoma	Human Rhabdomyosarcoma	Sk Muscle		disease	Uni-ZAP XR
H0125	Cem cells cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0128	Jurkat cells, thiouridine activated	Jurkat Cells				Uni-ZAP XR
H0129	Jurkat cells, thiouridine activated, fract II	Jurkat Cells				Uni-ZAP XR
H0130	LNCAP untreated	LNCAP Cell Line	Prostate	Cell Line		Uni-ZAP XR
H0131	LNCAP + o.3nM R1881	LNCAP Cell Line	Prostate	Cell Line		Uni-ZAP XR
H0132	LNCAP + 30nM R1881	LNCAP Cell Line	Prostate	Cell Line		Uni-ZAP XR
H0134	Raji Cells, cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0135	Human Synovial Sarcoma	Human Synovial Sarcoma	Synovium			Uni-ZAP XR
H0136	Supt Cells, cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0139	Activated T-Cells, 4 hrs.	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0140	Activated T-Cells, 8 hrs.	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0141	Activated T-Cells, 12 hrs.	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0142	MCF7 Cell Line	MCF7 Cell line	Breast	Cell Line		Uni-ZAP XR
H0144	Nine Week Old Early Stage Human	9 Wk Old Early Stage Human	Embryo			Uni-ZAP XR

H0147	Human Adult Liver	Human Adult Liver	Liver			Uni-ZAP XR
H0149	7 Week Old Early Stage Human, subtracted	Human Whole 7 Week Old Embryo	Embryo			Uni-ZAP XR
H0150	Human Epididymus	Epididymis	Testis			Uni-ZAP XR
H0151	Early Stage Human Liver	Human Fetal Liver	Liver			Uni-ZAP XR
H0152	Early Stage Human Liver, fract (II)	Human Fetal Liver	Liver			Uni-ZAP XR
H0153	Human adult lymph node, subtracted	Human Adult Lymph Node	Lymph Node			Uni-ZAP XR
H0154	Human Fibrosarcoma	Human Skin Fibrosarcoma	Skin		disease	Uni-ZAP XR
H0155	Human Thymus, subtracted	Human Thymus Tumor	Thymus			pBluescript
H0156	Human Adrenal Gland Tumor	Human Adrenal Gland Tumor	Adrenal Gland		disease	Uni-ZAP XR
H0157	Activated T-Cells, 0 hrs, ligation 2	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0158	Activated T-Cells, 4 hrs., ligation 2	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0159	Activated T-Cells, 8 hrs., ligation 2	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0160	Activated T-Cells, 12 hrs., ligation 2	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0161	Activated T-Cells, 24 hrs., ligation 2	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0163	Human Synovium	Human Synovium	Synoviu m			Uni-ZAP XR
H0164	Human Trachea Tumor	Human Trachea Tumor	Trachea		disease	Uni-ZAP XR
H0165	Human Prostate Cancer, Stage B2	Human Prostate Cancer, stage B2	Prostate		disease	Uni-ZAP XR
H0166	Human Prostate Cancer, Stage B2 fraction	Human Prostate Cancer, stage B2	Prostate		disease	Uni-ZAP XR
H0167	Activated T-Cells, 24 hrs.	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0168	Human Prostate Cancer, Stage C	Human Prostate Cancer, stage C	Prostate		disease	Uni-ZAP XR
H0169	Human Prostate Cancer, Stage C fraction	Human Prostate Cancer, stage C	Prostate		disease	Uni-ZAP XR
H0170	12 Week Old Early Stage Human	Twelve Week Old Early Stage Human	Embryo			Uni-ZAP XR
H0171	12 Week Old Early Stage Human, II	Twelve Week Old Early Stage Human	Embryo			Uni-ZAP XR
H0172	Human Fetal Brain, random primed	Human Fetal Brain	Brain			Lambda ZAP II
H0173	Human Cardiomyopathy, RNA remake	Human Cardiomyopathy	Heart		disease	Uni-ZAP XR
H0175	H. Adult Spleen, ziplox					pSport1
H0176	CAMA1Ee Cell Line	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0177	CAMA1Ee Cell Line	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0178	Human Fetal Brain	Human Fetal Brain	Brain			Uni-ZAP XR
H0179	Human Neutrophil	Human Neutrophil	Blood	Cell Line		Uni-ZAP XR

H0180	Human Primary Breast Cancer	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0181	Human Primary Breast Cancer	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0182	Human Primary Breast Cancer	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0183	Human Colon Cancer	Human Colon Cancer	Colon		disease	Uni-ZAP XR
H0184	Human Colon Cancer, metasticized to live	Human Colon Cancer, metasticized to liver	Liver		disease	Lambda ZAP II
H0186	Activated T-Cell	T-Cells	Blood	Cell Line		Lambda ZAP II
H0187	Resting T-Cell	T-Cells	Blood	Cell Line		Lambda ZAP II
H0188	Human Normal Breast	Human Normal Breast	Breast			Uni-ZAP XR
H0189	Human Resting Macrophage	Human Macrophage/Monocytes	Blood	Cell Line		Uni-ZAP XR
H0190	Human Activated Macrophage (LPS)	Human Macrophage/Monocytes	Blood	Cell Line		Uni-ZAP XR
H0192	Cem Cells, cyclohexamide treated, subtra	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0194	Human Cerebellum, subtracted	Human Cerebellum	Brain			pBluescript
H0196	Human Cardiomyopathy, subtracted	Human Cardiomyopathy	Heart			Uni-ZAP XR
H0197	Human Fetal Liver, subtracted	Human Fetal Liver	Liver			Uni-ZAP XR
H0199	Human Fetal Liver, subtracted, neg clone	Human Fetal Liver	Liver			Uni-ZAP XR
H0200	Human Greater Omentum, fract II remake,	Human Greater Omentum	peritoneum			Uni-ZAP XR
H0201	Human Hippocampus, subtracted	Human Hippocampus	Brain			pBluescript
H0202	Jurkat Cells, cyclohexamide treated, subtraction	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0204	Human Colon Cancer, subtracted	Human Colon Cancer	Colon			pBluescript
H0205	Human Colon Cancer, differential	Human Colon Cancer	Colon			pBluescript
H0207	LNCAP, differential expression	LNCAP Cell Line	Prostate	Cell Line		pBluescript
H0208	Early Stage Human Lung, subtracted	Human Fetal Lung	Lung			pBluescript
H0209	Human Cerebellum, differentially expressed	Human Cerebellum	Brain			Uni-ZAP XR
H0211	Human Prostate,differential expression	Human Prostate	Prostate			pBluescript
H0212	Human Prostate, subtracted	Human Prostate	Prostate			pBluescript
H0213	Human Pituitary, subtracted	Human Pituitary				Uni-ZAP XR

H0214	Raji cells, cyclohexamide treated, subtracted	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		pBluescript
H0215	Raji cells, cyclohexamide treated, differentially expressed	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		pBluescript
H0216	Supt cells, cyclohexamide treated, subtracted	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		pBluescript
H0217	Supt cells, cyclohexamide treated, differentially expressed	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		pBluescript
H0218	Activated T-Cells, 0hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0219	Activated T-Cells, 0hrs, differentially expressed	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0220	Activated T-Cells, 4 hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0222	Activated T-Cells, 8 hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0223	Activated T-Cells, 8 hrs, differentially expressed	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0224	Activated T-Cells, 12 hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0225	Activated T-Cells, 12hrs, differentially expressed	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0228	C7MCF7 cell line, estrogen treated	C7MCF7 Cell Line, estrogen treated	Breast	Cell Line		Uni-ZAP XR
H0229	Early Stage Human Brain, random primed	Early Stage Human Brain	Brain			Lambda ZAP II
H0230	Human Cardiomyopathy, diff exp	Human Cardiomyopathy	Heart		disease	Uni-ZAP XR
H0231	Human Colon, subtraction	Human Colon				pBluescript
H0232	Human Colon, differential expression	Human Colon				pBluescript
H0234	human colon cancer, metastatic to liver, differentially expressed	Human Colon Cancer, metasticized to liver	Liver			pBluescript
H0235	Human colon cancer, metaticized to liver, subtraction	Human Colon Cancer, metasticized to liver	Liver			pBluescript
H0238	Human Myometrium Leiomyoma	Human Myometrium Leiomyoma	Uterus		disease	Uni-ZAP XR
H0239	Human Kidney Tumor	Human Kidney Tumor	Kidney		disease	Uni-ZAP XR
H0240	C7MCF7 cell line, estrogen treated, Differential	C7MCF7 Cell Line, estrogen treated	Breast	Cell Line		Uni-ZAP XR
H0241	C7MCF7 cell line, estrogen treated, subtraction	C7MCF7 Cell Line, estrogen treated	Breast	Cell Line		Uni-ZAP XR
H0242	Human Fetal Heart, Differential (Fetal-Specific)	Human Fetal Heart	Heart			pBluescript

H0244	Human 8 Week Whole Embryo, subtracted	Human 8 Week Old Embryo	Embryo			Uni-ZAP XR
H0246	Human Fetal Liver-Enzyme subtraction	Human Fetal Liver	Liver			Uni-ZAP XR
H0247	Human Membrane Bound Polysomes-Enzyme Subtraction	Human Membrane Bound Polysomes	Blood	Cell Line		Uni-ZAP XR
H0249	HE7, subtracted by hybridization with E7 cDNA	Human Whole 7 Week Old Embryo	Embryo			Uni-ZAP XR
H0250	Human Activated Monocytes	Human Monocytes				Uni-ZAP XR
H0251	Human Chondrosarcoma	Human Chondrosarcoma	Cartilage		disease	Uni-ZAP XR
H0252	Human Osteosarcoma	Human Osteosarcoma	Bone		disease	Uni-ZAP XR
H0253	Human adult testis, large inserts	Human Adult Testis	Testis			Uni-ZAP XR
H0254	Breast Lymph node cDNA library	Breast Lymph Node	Lymph Node			Uni-ZAP XR
H0255	breast lymph node CDNA library	Breast Lymph Node	Lymph Node			Lambda ZAP II
H0256	HL-60, unstimulated	Human HL-60 Cells, unstimulated	Blood	Cell Line		Uni-ZAP XR
H0257	HL-60, PMA 4H	HL-60 Cells, PMA stimulated 4H	Blood	Cell Line		Uni-ZAP XR
H0261	H. cerebellum, Enzyme subtracted	Human Cerebellum	Brain			Uni-ZAP XR
H0263	human colon cancer	Human Colon Cancer	Colon		disease	Lambda ZAP II
H0264	human tonsils	Human Tonsil	Tonsil			Uni-ZAP XR
H0265	Activated T-Cell (12hs)/Thiouridine labelledEco	T-Cells	Blood	Cell Line		Uni-ZAP XR
H0266	Human Microvascular Endothelial Cells, fract. A	HMEC	Vein	Cell Line		Lambda ZAP II
H0267	Human Microvascular Endothelial Cells, fract. B	HMEC	Vein	Cell Line		Lambda ZAP II
H0268	Human Umbilical Vein Endothelial Cells, fract. A	HUVE Cells	Umbilical vein	Cell Line		Lambda ZAP II
H0269	Human Umbilical Vein Endothelial Cells, fract. B	HUVE Cells	Umbilical vein	Cell Line		Lambda ZAP II
H0270	HPAS (human pancreas, subtracted)	Human Pancreas	Pancreas			Uni-ZAP XR
H0271	Human Neutrophil, Activated	Human Neutrophil - Activated	Blood	Cell Line		Uni-ZAP XR
H0272	HUMAN TONSILS, FRACTION 2	Human Tonsil	Tonsil			Uni-ZAP XR
H0274	Human Adult Spleen, fractionII	Human Adult Spleen	Spleen			Uni-ZAP XR
H0275	Human Infant Adrenal Gland, Subtracted	Human Infant Adrenal Gland	Adrenal gland			pBluescript
H0279	K562 cells	K562 Cell line	cell line	Cell Line		ZAP Express
H0280	K562 + PMA (36 hrs)	K562 Cell line	cell line	Cell Line		ZAP Express
H0281	Lymph node, abnorm.	Lymph Node,	Lymph	Cell Line		ZAP Express

	cell line (ATCC #7225)	abnormal cell line	Node			
H0282	HBGB"s differential consolidation	Human Primary Breast Cancer	Breast			Uni-ZAP XR
H0284	Human OB MG63 control fraction I	Human Osteoblastoma MG63 cell line	Bone	Cell Line		Uni-ZAP XR
H0286	Human OB MG63 treated (10 nM E2) fraction I	Human Osteoblastoma MG63 cell line	Bone	Cell Line		Uni-ZAP XR
H0288	Human OB HOS control fraction I	Human Osteoblastoma HOS cell line	Bone	Cell Line		Uni-ZAP XR
H0290	Human OB HOS treated (1 nM E2) fraction I	Human Osteoblastoma HOS cell line	Bone	Cell Line		Uni-ZAP XR
H0292	Human OB HOS treated (10 nM E2) fraction I	Human Osteoblastoma HOS cell line	Bone	Cell Line		Uni-ZAP XR
H0293	WI 38 cells					Uni-ZAP XR
H0294	Amniotic Cells - TNF induced	Amniotic Cells - TNF induced	Placenta	Cell Line		Uni-ZAP XR
H0295	Amniotic Cells - Primary Culture	Amniotic Cells - Primary Culture	Placenta	Cell Line		Uni-ZAP XR
H0298	HCBB"s differential consolidation	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0299	HCBA"s differential consolidation	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0300	CD34 positive cells (Cord Blood)	CD34 Positive Cells	Cord Blood			ZAP Express
H0305	CD34 positive cells (Cord Blood)	CD34 Positive Cells	Cord Blood			ZAP Express
H0306	CD34 depleted Buffy Coat (Cord Blood)	CD34 Depleted Buffy Coat (Cord Blood)	Cord Blood			ZAP Express
H0309	Human Chronic Synovitis	Synovium, Chronic Synovitis/ Osteoarthritis	Synoviu m		disease	Uni-ZAP XR
H0310	human caudate nucleus	Brain	Brain			Uni-ZAP XR
H0313	human pleural cancer	pleural cancer			disease	pBluescript
H0316	HUMAN STOMACH	Human Stomach	Stomach			Uni-ZAP XR
H0318	HUMAN B CELL LYMPHOMA	Human B Cell Lymphoma	Lymph Node		disease	Uni-ZAP XR
H0320	Human frontal cortex	Human Frontal Cortex	Brain			Uni-ZAP XR
H0321	HUMAN SCHWANOMA	Schwanoma	Nerve		disease	Uni-ZAP XR
H0327	human corpus colosum	Human Corpus Callosum	Brain			Uni-ZAP XR
H0328	human ovarian cancer	Ovarian Cancer	Ovary		disease	Uni-ZAP XR
H0329	Dermatofibrosarcoma Protuberance	Dermatofibrosarcom a Protuberans	Skin		disease	Uni-ZAP XR
H0330	HCBB"s Subtractive (-mito genes)	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0331	Hepatocellular Tumor	Hepatocellular Tumor	Liver		disease	Lambda ZAP II
H0333	Hemangiopericytoma	Hemangiopericytom a	Blood vessel		disease	Lambda ZAP II
H0334	Kidney cancer	Kidney Cancer	Kidney		disease	Uni-ZAP XR

H0339	Duodenum	Duodenum				Uni-ZAP XR
H0340	Corpus Callosum	Corpus Collosum-93052				Uni-ZAP XR
H0341	Bone Marrow Cell Line (RS4;11)	Bone Marrow Cell Line RS4;11	Bone Marrow	Cell Line		Uni-ZAP XR
H0343	stomach cancer (human)	Stomach Cancer - 5383A (human)			disease	Uni-ZAP XR
H0344	Adipose tissue (human)	Adipose - 6825A (human)				Uni-ZAP XR
H0345	SKIN	Skin - 4000868H	Skin			Uni-ZAP XR
H0346	Brain-medulloblastoma	Brain (Medulloblastoma)-9405C006R	Brain		disease	Uni-ZAP XR
H0349	human adult liver cDNA library	Human Adult Liver	Liver			pCMVSport 1
H0350	Human Fetal Liver, mixed 10 & 14 week	Human Fetal Liver, mixed 10&14 Week	Liver			Uni-ZAP XR
H0351	Glioblastoma	Glioblastoma	Brain		disease	Uni-ZAP XR
H0352	wilm"s tumor	Wilm"s Tumor			disease	Uni-ZAP XR
H0354	Human Leukocytes	Human Leukocytes	Blood	Cell Line		pCMVSport 1
H0355	Human Liver	Human Liver, normal Adult				pCMVSport 1
H0356	Human Kidney	Human Kidney	Kidney			pCMVSport 1
H0357	H. Normalized Fetal Liver, II	Human Fetal Liver	Liver			Uni-ZAP XR
H0359	KMH2 cell line	KMH2				ZAP Express
H0360	Hemangiopericytoma	Hemangiopericytoma			disease	
H0361	Human rejected kidney	Human Rejected Kidney			disease	pBluescript
H0362	HeLa cell line	HELA CELL LINE				pSport1
H0363	Human Brain Medulla, subtracted	Human Brain Medulla				pBluescript
H0364	Human Osteoclastoma, excised	Human Osteoclastoma			disease	pBluescript
H0365	Osteoclastoma-normalized B	Human Osteoclastoma			disease	Uni-ZAP XR
H0366	L428 cell line	L428				ZAP Express
H0369	H. Atrophic Endometrium	Atrophic Endometrium and myometrium				Uni-ZAP XR
H0370	H. Lymph node breast Cancer	Lymph node with Met. Breast Cancer			disease	Uni-ZAP XR
H0372	Human Testes	Human Testes	Testis			pCMVSport 1
H0373	Human Heart	Human Adult Heart	Heart			pCMVSport 1
H0374	Human Brain	Human Brain				pCMVSport 1
H0375	Human Lung	Human Lung				pCMVSport 1
H0376	Human Spleen	Human Adult Spleen	Spleen			pCMVSport 1
H0379	Human Tongue, frac 1	Human Tongue				pSport1
H0380	Human Tongue, frac 2	Human Tongue				pSport1
H0381	Bone Cancer	Bone Cancer			disease	Uni-ZAP XR
H0383	Human Prostate BPH, re-excision	Human Prostate BPH				Uni-ZAP XR
H0384	Brain, Kozak	Human Brain				pCMVSport 1
H0385	H. Leukocytes, Kozak	Human Leukocytes	Blood	Cell Line		pCMVSport 1
H0386	Leukocyte and Lung; 4 screens	Human Leukocytes	Blood	Cell Line		pCMVSport 1
H0388	Human Rejected	Human Rejected			disease	pBluescript

	Kidney, 704 re-excision	Kidney				
H0390	Human Amygdala Depression, re-excision	Human Amygdala Depression			disease	pBluescript
H0391	H. Meniingima, M6	Human Meningima	brain			pSport1
H0392	H. Meningima, M1	Human Meningima	brain			pSport1
H0393	Fetal Liver, subtraction II	Human Fetal Liver	Liver			pBluescript
H0394	A-14 cell line	Redd-Sternberg cell				ZAP Express
H0395	A1-CELL LINE	Redd-Sternberg cell				ZAP Express
H0396	L1 Cell line	Redd-Sternberg cell				ZAP Express
H0398	Human Newborn Bladder	Human Newborn Bladder				pBluescript
H0399	Human Kidney Cortex, re-rescue	Human Kidney Cortex				Lambda ZAP II
H0400	Human Striatum Depression, re-rescue	Human Brain, Striatum Depression	Brain			Lambda ZAP II
H0401	Human Pituitary, subtracted V	Human Pituitary				pBluescript
H0402	CD34 depleted Buffy Coat (Cord Blood), re-excision	CD34 Depleted Buffy Coat (Cord Blood)	Cord Blood			ZAP Express
H0403	H. Umbilical Vein Endothelial Cells, IL4 induced	HUVE Cells	Umbilical vein	Cell Line		Uni-ZAP XR
H0404	H. Umbilical Vein endothelial cells, uninduced	HUVE Cells	Umbilical vein	Cell Line		Uni-ZAP XR
H0405	Human Pituitary, subtracted VI	Human Pituitary				pBluescript
H0406	H Amygdala Depression, subtracted	Human Amygdala Depression				Uni-ZAP XR
H0408	Human kidney Cortex, subtracted	Human Kidney Cortex				pBluescript
H0409	H. Striatum Depression, subtracted	Human Brain, Striatum Depression	Brain			pBluescript
H0410	H. Male bladder, adult	H Male Bladder, Adult	Bladder			pSport1
H0411	H Female Bladder, Adult	Human Female Adult Bladder	Bladder			pSport1
H0412	Human umbilical vein endothelial cells, IL-4 induced	HUVE Cells	Umbilical vein	Cell Line		pSport1
H0413	Human Umbilical Vein Endothelial Cells, uninduced	HUVE Cells	Umbilical vein	Cell Line		pSport1
H0414	Ovarian Tumor I, OV5232	Ovarian Tumor, OV5232	Ovary		disease	pSport1
H0415	H. Ovarian Tumor, II, OV5232	Ovarian Tumor, OV5232	Ovary		disease	pCMVSport 2.0
H0416	Human Neutrophils, Activated, re-excision	Human Neutrophil - Activated	Blood	Cell Line		pBluescript
H0417	Human Pituitary, subtracted VIII	Human Pituitary				pBluescript
H0418	Human Pituitary, subtracted VII	Human Pituitary				pBluescript
H0419	Bone Cancer, re-excision	Bone Cancer				Uni-ZAP XR
H0421	Human Bone Marrow,	Bone Marrow				pBluescript

	re-excision					
H0422	T-Cell PHA 16 hrs	T-Cells	Blood	Cell Line		pSport1
H0423	T-Cell PHA 24 hrs	T-Cells	Blood	Cell Line		pSport1
H0424	Human Pituitary, subt IX	Human Pituitary				pBluescript
H0427	Human Adipose	Human Adipose, left hiplipoma				pSport1
H0428	Human Ovary	Human Ovary Tumor	Ovary			pSport1
H0429	K562 + PMA (36 hrs),re-excision	K562 Cell line	cell line	Cell Line		ZAP Express
H0431	H. Kidney Medulla, re-excision	Kidney medulla	Kidney			pBluescript
H0432	H. Kidney Pyramid	Kidney pyramids	Kidney			pBluescript
H0433	Human Umbilical Vein Endothelial cells, frac B, re-excision	HUVE Cells	Umbilical vein	Cell Line		pBluescript
H0434	Human Brain, striatum, re-excision	Human Brain, Striatum				pBluescript
H0435	Ovarian Tumor 10-3-95	Ovarian Tumor, OV350721	Ovary			pCMVSport 2.0
H0436	Resting T-Cell Library,II	T-Cells	Blood	Cell Line		pSport1
H0437	H Umbilical Vein Endothelial Cells, frac A, re-excision	HUVE Cells	Umbilical vein	Cell Line		Lambda ZAP II
H0438	H. Whole Brain #2, re-excision	Human Whole Brain #2				ZAP Express
H0439	Human Eosinophils	Eosinophils				pBluescript
H0440	FGF enriched mixed library	Mixed libraries				pCMVSport 1
H0441	H. Kidney Cortex, subtracted	Kidney cortex	Kidney			pBluescript
H0442	H. Striatum Depression, subt II	Human Brain, Striatum Depression	Brain			pBluescript
H0443	H. Adipose, subtracted	Human Adipose, left hiplipoma				pSport1
H0444	Spleen metastic melanoma	Spleen, Metastic malignant melanoma	Spleen		disease	pSport1
H0445	Spleen, Chronic lymphocytic leukemia	Human Spleen, CLL	Spleen		disease	pSport1
H0447	Salivary gland, re-excision	Human Salivary Gland	Salivary gland			Uni-ZAP XR
H0448	Salivary gland, subtracted	Human Salivary Gland	Salivary gland			Lambda ZAP II
H0449	CD34+ cell, I	CD34 positive cells				pSport1
H0450	CD34+cells, II	CD34 positive cells				pCMVSport 2.0
H0453	H. Kidney Pyramid, subtracted	Kidney pyramids	Kidney			pBluescript
H0455	H. Striatum Depression, subt	Human Brain, Striatum Depression	Brain			pBluescript
H0457	Human Eosinophils	Human Eosinophils				pSport1
H0458	CD34+ cell, I, frac II	CD34 positive cells				pSport1
H0459	CD34+cells, II, FRACTION 2	CD34 positive cells				pCMVSport 2.0
H0461	H. Kidney Medulla, subtracted	Kidney medulla	Kidney			pBluescript

H0462	H. Amygdala Depression, subtracted		Brain			pBluescript
H0477	Human Tonsil, Lib 3	Human Tonsil	Tonsil			pSport1
H0478	Salivary Gland, Lib 2	Human Salivary Gland	Salivary gland			pSport1
H0479	Salivary Gland, Lib 3	Human Salivary Gland	Salivary gland			pSport1
H0483	Breast Cancer cell line, MDA 36	Breast Cancer Cell line, MDA 36				pSport1
H0484	Breast Cancer Cell line, angiogenic	Breast Cancer Cell line, Angiogenic, 36T3				pSport1
H0485	Hodgkin"s Lymphoma I	Hodgkin"s Lymphoma I			disease	pCMVSport 2.0
H0486	Hodgkin"s Lymphoma II	Hodgkin"s Lymphoma II			disease	pCMVSport 2.0
H0487	Human Tonsils, lib I	Human Tonsils				pCMVSport 2.0
H0488	Human Tonsils, Lib 2	Human Tonsils				pCMVSport 2.0
H0489	Crohn"s Disease	Ileum	Intestine		disease	pSport1
H0490	Hl-60, untreated, subtracted	Human HL-60 Cells, unstimulated	Blood	Cell Line		Uni-ZAP XR
H0491	HL-60, PMA 4H, subtracted	HL-60 Cells, PMA stimulated 4H	Blood	Cell Line		Uni-ZAP XR
H0492	HL-60, RA 4h, Subtracted	HL-60 Cells, RA stimulated for 4H	Blood	Cell Line		Uni-ZAP XR
H0494	Keratinocyte	Keratinocyte				pCMVSport 2.0
H0497	HEL cell line	HEL cell line		HEL 92.1.7		pSport1
H0504	CAPFINDER, Crohn"s Disease, lib 2	Ileum	Intestine		disease	pCMVSport 2.0
H0505	Human Astrocyte	Human Astrocyte				pSport1
H0506	Ulcerative Colitis	Colon	Colon			pSport1
H0509	Liver, Hepatoma	Human Liver, Hepatoma, patient 8	Liver		disease	pCMVSport 3.0
H0510	Human Liver, normal	Human Liver, normal, Patient # 8	Liver			pCMVSport 3.0
H0512	Keratinocyte, lib 3	Keratinocyte				pCMVSport 2.0
H0517	Nasal polyps	Nasal polyps				pCMVSport 2.0
H0518	pBMC stimulated w/ poly I/C	pBMC stimulated with poly I/C				pCMVSport 3.0
H0519	NTERA2, control	NTERA2, Teratocarcinoma cell line				pCMVSport 3.0
H0520	NTERA2 + retinoic acid, 14 days	NTERA2, Teratocarcinoma cell line				pSport1
H0521	Primary Dendritic Cells, lib 1	Primary Dendritic cells				pCMVSport 3.0
H0522	Primary Dendritic cells,frac 2	Primary Dendritic cells				pCMVSport 3.0
H0523	Primary Dendritic cells,CapFinder2, frac 1	Primary Dendritic cells				pSport1
H0524	Primary Dendritic	Primary Dendritic				pSport1

	Cells, CapFinder, frac 2	cells				
H0525	PCR, pBMC I/C treated	pBMC stimulated with poly I/C				PCRII
H0529	Myoloid Progenitor Cell Line	TF-1 Cell Line; Myoloid progenitor cell line				pCMVSport 3.0
H0530	Human Dermal Endothelial Cells,untreated	Human Dermal Endothelial Cells; untreated				pSport1
H0533	Human Stromal endometrial fibroblasts, treated w/ estradiol	Human Stromal endometrial fibroblasts, treated wit				pSport1
H0534	Human Stromal endometrial fibroblasts, treated with progesterone	Human Stromal endometrial fibroblasts, treated w/				pSport1
H0535	Human ovary tumor cell OV350721	Ovarian Tumor, OV350721	Ovary		disease	pSport1
H0537	H. Primary Dendritic Cells,lib 3	Primary Dendritic cells				pCMVSport 2.0
H0538	Merkel Cells	Merkel cells	Lymph node			pSport1
H0539	Pancreas Islet Cell Tumor	Pancreas Islet Cell Tumour	Pancreas		disease	pSport1
H0540	Skin, burned	Skin, leg burned	Skin			pSport1
H0542	T Cell helper I	Helper T cell				pCMVSport 3.0
H0543	T cell helper II	Helper T cell				pCMVSport 3.0
H0544	Human endometrial stromal cells	Human endometrial stromal cells				pCMVSport 3.0
H0545	Human endometrial stromal cells-treated with progesterone	Human endometrial stromal cells-treated with proge				pCMVSport 3.0
H0546	Human endometrial stromal cells-treated with estradiol	Human endometrial stromal cells-treated with estra				pCMVSport 3.0
H0547	NTERA2 teratocarcinoma cell line+retinoic acid (14 days)	NTERA2, Teratocarcinoma cell line				pSport1
H0549	H. Epididiymus, caput & corpus	Human Epididiymus, caput and corpus				Uni-ZAP XR
H0550	H. Epididiymus, cauda	Human Epididiymus, cauda				Uni-ZAP XR
H0551	Human Thymus Stromal Cells	Human Thymus Stromal Cells				pCMVSport 3.0
H0552	Signal trap,Femur Bone Marrow,pooled	Femur Bone marrow, pooled from 8 male/female				Other
H0553	Human Placenta	Human Placenta				pCMVSport 3.0
H0555	Rejected Kidney, lib 4	Human Rejected Kidney	Kidney		disease	pCMVSport 3.0
H0556	Activated T-cell(12h)/Thiouridine-re-excision	T-Cells	Blood	Cell Line		Uni-ZAP XR

H0559	HL-60, PMA 4H, re-excision	HL-60 Cells, PMA stimulated 4H	Blood	Cell Line		Uni-ZAP XR
H0560	KMH2	KMH2				pCMVSport 3.0
H0561	L428	L428				pCMVSport 3.0
H0562	Human Fetal Brain, normalized c5-11-26	Human Fetal Brain				pCMVSport 2.0
H0563	Human Fetal Brain, normalized 50021F	Human Fetal Brain				pCMVSport 2.0
H0564	Human Fetal Brain, normalized C5001F	Human Fetal Brain				pCMVSport 2.0
H0565	HUman Fetal Brain, normalized 100024F	Human Fetal Brain				pCMVSport 2.0
H0566	Human Fetal Brain,normalized c50F	Human Fetal Brain				pCMVSport 2.0
H0567	Human Fetal Brain, normalized A5002F	Human Fetal Brain				pCMVSport 2.0
H0569	Human Fetal Brain, normalized CO	Human Fetal Brain				pCMVSport 2.0
H0570	Human Fetal Brain, normalized C500H	Human Fetal Brain				pCMVSport 2.0
H0571	Human Fetal Brain, normalized C500HE	Human Fetal Brain				pCMVSport 2.0
H0572	Human Fetal Brain, normalized AC5002	Human Fetal Brain				pCMVSport 2.0
H0574	Hepatocellular Tumor; re-excision	Hepatocellular Tumor	Liver		disease	Lambda ZAP II
H0575	Human Adult Pulmonary;re-excision	Human Adult Pulmonary	Lung			Uni-ZAP XR
H0576	Resting T-Cell; re-excision	T-Cells	Blood	Cell Line		Lambda ZAP II
H0578	Human Fetal Thymus	Fetal Thymus	Thymus			pSport1
H0579	Pericardium	Pericardium	Heart			pSport1
H0580	Dendritic cells, pooled	Pooled dendritic cells				pCMVSport 3.0
H0581	Human Bone Marrow, treated	Human Bone Marrow	Bone Marrow			pCMVSport 3.0
H0583	B Cell lymphoma	B Cell Lymphoma	B Cell		disease	pCMVSport 3.0
H0584	Activated T-cells, 24 hrs,re-excision	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0585	Activated T-Cells,12 hrs,re-excision	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0586	Healing groin wound, 6.5 hours post incision	healing groin wound, 6.5 hours post incision - 2/	groin		disease	pCMVSport 3.0
H0587	Healing groin wound; 7.5 hours post incision	Groin-2/19/97	groin		disease	pCMVSport 3.0
H0589	CD34 positive cells (cord blood),re-ex	CD34 Positive Cells	Cord Blood			ZAP Express
H0590	Human adult small intestine,re-excision	Human Adult Small Intestine	Small Int.			Uni-ZAP XR
H0591	Human T-cell lymphoma;re-excision	T-Cell Lymphoma	T-Cell		disease	Uni-ZAP XR
H0592	Healing groin wound - zero hr post-incision (control)	HGS wound healing project; abdomen			disease	pCMVSport 3.0
H0593	Olfactory	Olfactory epithelium				pCMVSport

	epithelium;nasalcavity	from roof of left nasal cacit				3.0
H0594	Human Lung Cancer;re-excision	Human Lung Cancer	Lung		disease	Lambda ZAP II
H0595	Stomach cancer (human);re-excision	Stomach Cancer - 5383A (human)			disease	Uni-ZAP XR
H0596	Human Colon Cancer;re-excision	Human Colon Cancer	Colon			Lambda ZAP II
H0597	Human Colon; re-excision	Human Colon				Lambda ZAP II
H0598	Human Stomach;re-excision	Human Stomach	Stomach			Uni-ZAP XR
H0599	Human Adult Heart;re-excision	Human Adult Heart	Heart			Uni-ZAP XR
H0600	Healing Abdomen wound;70&90 min post incision	Abdomen			disease	pCMVSport 3.0
H0601	Healing Abdomen Wound;15 days post incision	Abdomen			disease	pCMVSport 3.0
H0602	Healing Abdomen Wound;21&29 days post incision	Abdomen			disease	pCMVSport 3.0
H0604	Human Pituitary, re-excision	Human Pituitary				pBluescript
H0606	Human Primary Breast Cancer;re-excision	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0607	H.Leukocytes, normalized cot 50A3	H.Leukocytes				pCMVSport 1
H0608	H. Leukocytes, control	H.Leukocytes				pCMVSport 1
H0609	H. Leukocytes, normalized cot > 500A	H.Leukocytes				pCMVSport 1
H0610	H. Leukocytes, normalized cot 5A	H.Leukocytes				pCMVSport 1
H0611	H. Leukocytes, normalized cot 500 B	H.Leukocytes				pCMVSport 1
H0612	H.Leukocytes, normalized cot 50 B	H.Leukocytes				pCMVSport 1
H0613	H.Leukocytes, normalized cot 5B	H.Leukocytes				pCMVSport 1
H0614	H. Leukocytes, normalized cot 500 A	H.Leukocytes				pCMVSport 1
H0615	Human Ovarian Cancer Reexcision	Ovarian Cancer	Ovary		disease	Uni-ZAP XR
H0616	Human Testes, Reexcision	Human Testes	Testis			Uni-ZAP XR
H0617	Human Primary Breast Cancer Reexcision	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0618	Human Adult Testes, Large Inserts, Reexcision	Human Adult Testis	Testis			Uni-ZAP XR
H0619	Fetal Heart	Human Fetal Heart	Heart			Uni-ZAP XR
H0620	Human Fetal Kidney; Reexcision	Human Fetal Kidney	Kidney			Uni-ZAP XR
H0622	Human Pancreas Tumor; Reexcision	Human Pancreas Tumor	Pancreas		disease	Uni-ZAP XR
H0623	Human Umbilical Vein; Reexcision	Human Umbilical Vein Endothelial Cells	Umbilical vein			Uni-ZAP XR

H0624	12 Week Early Stage Human II; Reexcision	Twelve Week Old Early Stage Human	Embryo			Uni-ZAP XR
H0625	Ku 812F Basophils Line	Ku 812F Basophils				pSport1
H0626	Saos2 Cells; Untreated	Saos2 Cell Line; Untreated				pSport1
H0627	Saos2 Cells; Vitamin D3 Treated	Saos2 Cell Line; Vitamin D3 Treated				pSport1
H0628	Human Pre-Differentiated Adipocytes	Human Pre-Differentiated Adipocytes				Uni-ZAP XR
H0629	Human Leukocyte, control #2	Human Normalized leukocyte				pCMVSport 1
H0630	Human Leukocytes,normalized control #4	Human Normalized leukocyte				pCMVSport 1
H0631	Saos2, Dexamethosome Treated	Saos2 Cell Line; Dexamethosome Treated				pSport1
H0632	Hepatocellular Tumor;re-excision	Hepatocellular Tumor	Liver			Lambda ZAP II
H0633	Lung Carcinoma A549 TNFalpha activated	TNFalpha activated A549--Lung Carcinoma			disease	pSport1
H0634	Human Testes Tumor, re-excision	Human Testes Tumor	Testis		disease	Uni-ZAP XR
H0635	Human Activated T-Cells, re-excision	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0637	Dendritic Cells From CD34 Cells	Dentritic cells from CD34 cells				pSport1
H0638	CD40 activated monocyte dendridic cells	CD40 activated monocyte dendridic cells				pSport1
H0639	Ficolled Human Stromal Cells, 5Fu treated	Ficolled Human Stromal Cells, 5Fu treated				Other
H0640	Ficolled Human Stromal Cells, Untreated	Ficolled Human Stromal Cells, Untreated				Other
H0641	LPS activated derived dendritic cells	LPS activated monocyte derived dendritic cells				pSport1
H0642	Hep G2 Cells, lambda library	Hep G2 Cells				Other
H0643	Hep G2 Cells, PCR library	Hep G2 Cells				Other
H0644	Human Placenta (re-excision)	Human Placenta	Placenta			Uni-ZAP XR
H0645	Fetal Heart, re-excision	Human Fetal Heart	Heart			Uni-ZAP XR
H0646	Lung, Cancer (4005313 A3): Invasive Poorly Differentiated Lung Adenocarcinoma,	Metastatic squamous cell lung carcinoma, poorly di				pSport1
H0647	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	Invasive poorly differentiated lung adenocarcinoma			disease	pSport1
H0648	Ovary, Cancer:	Papillary Cstic			disease	pSport1

	(4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	neoplasm of low malignant potentia				
H0649	Lung, Normal: (4005313 B1)	Normal Lung				pSport1
H0650	B-Cells	B-Cells				pCMVSport 3.0
H0651	Ovary, Normal: (9805C040R)	Normal Ovary				pSport1
H0652	Lung, Normal: (4005313 B1)	Normal Lung				pSport1
H0653	Stromal Cells	Stromal Cells				pSport1
H0654	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenoc	Metastatic Squamous cell lung Carcinoma poorly dif				Other
H0656	B-cells (unstimulated)	B-cells (unstimulated)				pSport1
H0657	B-cells (stimulated)	B-cells (stimulated)				pSport1
H0658	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	9809C332- Poorly differentiate	Ovary & Fallopia n Tubes		disease	pSport1
H0659	Ovary, Cancer (15395A1F): Grade II Papillary Carcinoma	Grade II Papillary Carcinoma, Ovary	Ovary		disease	pSport1
H0660	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	Poorly differentiated carcinoma, ovary			disease	pSport1
H0661	Breast, Cancer: (4004943 A5)	Breast cancer			disease	pSport1
H0662	Breast, Normal: (4005522B2)	Normal Breast - #4005522(B2)	Breast			pSport1
H0663	Breast, Cancer: (4005522 A2)	Breast Cancer - #4005522(A2)	Breast		disease	pSport1
H0664	Breast, Cancer: (9806C012R)	Breast Cancer	Breast		disease	pSport1
H0665	Stromal cells 3.88	Stromal cells 3.88				pSport1
H0666	Ovary, Cancer: (4004332 A2)	Ovarian Cancer, Sample #4004332A2			disease	pSport1
H0667	Stromal cells(HBM3.18)	Stromal cell(HBM 3.18)				pSport1
H0668	stromal cell clone 2.5	stromal cell clone 2.5				pSport1
H0669	Breast, Cancer: (4005385 A2)	Breast Cancer (4005385A2)	Breast			pSport1
H0670	Ovary, Cancer(4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	Ovarian Cancer - 4004650A3				pSport1
H0671	Breast, Cancer: (9802C02OE)	Breast Cancer- Sample # 9802C02OE				pSport1
H0672	Ovary, Cancer: (4004576 A8)	Ovarian Cancer(4004576A8)	Ovary			pSport1
H0673	Human Prostate	Human Prostate	Prostate			Uni-ZAP XR

	Cancer, Stage B2; re-excision	Cancer, stage B2				
H0674	Human Prostate Cancer, Stage C; re-excission	Human Prostate Cancer, stage C	Prostate			Uni-ZAP XR
H0675	Colon, Cancer: (9808C064R)	Colon Cancer 9808C064R				pCMVSport 3.0
H0676	Colon, Cancer: (9808C064R)-total RNA	Colon Cancer 9808C064R				pCMVSport 3.0
H0677	TNFR degenerate oligo	B-Cells				PCRII
H0678	screened clones from placental library	Placenta	Placenta			Other
H0682	Serous Papillary Adenocarcinoma	serous papillary adenocarcinoma (9606G304SPA3B)				pCMVSport 3.0
H0683	Ovarian Serous Papillary Adenocarcinoma	Serous papillary adenocarcinoma, stage 3C (9804G01				pCMVSport 3.0
H0684	Serous Papillary Adenocarcinoma	Ovarian Cancer-9810G606	Ovaries			pCMVSport 3.0
H0685	Adenocarcinoma of Ovary, Human Cell Line, # OVCAR-3	Adenocarcinoma of Ovary, Human Cell Line, # OVCAR-				pCMVSport 3.0
H0686	Adenocarcinoma of Ovary, Human Cell Line	Adenocarcinoma of Ovary, Human Cell Line, # SW-626				pCMVSport 3.0
H0687	Human normal ovary(#9610G215)	Human normal ovary(#9610G215)	Ovary			pCMVSport 3.0
H0688	Human Ovarian Cancer(#9807G017)	Human Ovarian cancer(#9807G017), mRNA from Maura Ru				pCMVSport 3.0
H0689	Ovarian Cancer	Ovarian Cancer, #9806G019				pCMVSport 3.0
H0690	Ovarian Cancer, # 9702G001	Ovarian Cancer, #9702G001				pCMVSport 3.0
H0691	Normal Ovary, #9710G208	normal ovary, #9710G208				pCMVSport 3.0
H0692	BLyS Receptor from Expression Cloning	B Cell Lymphoma	B Cell			pCMVSport 3.0
H0693	Normal Prostate #ODQ3958EN	Normal Prostate Tissue # ODQ3958EN				pCMVSport 3.0
H0694	Prostate gland adenocarcinoma	Prostate gland, adenocarcinoma, mod/diff, gleason	prostate gland			pCMVSport 3.0
H0695	mononucleocytes from patient	mononucleocytes from patient at Shady Grove Hospit				pCMVSport 3.0
N0006	Human Fetal Brain	Human Fetal Brain				
N0007	Human Hippocampus	Human Hippocampus				
N0008	Human Hippocampus, subtracted	Human Hippocampus				
N0009	Human Hippocampus, prescreened	Human Hippocampus				
N0011	Human Brain	Human Brain				
S0001	Brain frontal cortex	Brain frontal cortex	Brain			Lambda ZAP

						II
S0002	Monocyte activated	Monocyte-activated	blood	Cell Line		Uni-ZAP XR
S0003	Human Osteoclastoma	Osteoclastoma	bone		disease	Uni-ZAP XR
S0004	Prostate	Prostate BPH	Prostate			Lambda ZAP II
S0005	Heart	Heart-left ventricle	Heart			pCDNA
S0006	Neuroblastoma	Human Neural Blastoma			disease	pCDNA
S0007	Early Stage Human Brain	Human Fetal Brain				Uni-ZAP XR
S0008	Osteoclastoma	Osteoclastoma	bone		disease	Uni-ZAP XR
S0010	Human Amygdala	Amygdala				Uni-ZAP XR
S0011	STROMAL - OSTEOCLASTOMA	Osteoclastoma	bone		disease	Uni-ZAP XR
S0013	Prostate	Prostate	prostate			Uni-ZAP XR
S0014	Kidney Cortex	Kidney cortex	Kidney			Uni-ZAP XR
S0015	Kidney medulla	Kidney medulla	Kidney			Uni-ZAP XR
S0016	Kidney Pyramids	Kidney pyramids	Kidney			Uni-ZAP XR
S0021	Whole brain	Whole brain	Brain			ZAP Express
S0022	Human Osteoclastoma Stromal Cells - unamplified	Osteoclastoma Stromal Cells				Uni-ZAP XR
S0023	Human Kidney Cortex - unamplified	Human Kidney Cortex				
S0024	Human Kidney Medulla - unamplified	Human Kidney Medulla				
S0025	Human Kidney Pyramids - unamplified	Human Kidney Pyramids				
S0026	Stromal cell TF274	stromal cell	Bone marrow	Cell Line		Uni-ZAP XR
S0027	Smooth muscle, serum treated	Smooth muscle	Pulmana ry artery	Cell Line		Uni-ZAP XR
S0028	Smooth muscle,control	Smooth muscle	Pulmana ry artery	Cell Line		Uni-ZAP XR
S0029	brain stem	Brain stem	brain			Uni-ZAP XR
S0030	Brain pons	Brain Pons	Brain			Uni-ZAP XR
S0031	Spinal cord	Spinal cord	spinal cord			Uni-ZAP XR
S0032	Smooth muscle-ILb induced	Smooth muscle	Pulmana ry artery	Cell Line		Uni-ZAP XR
S0035	Brain medulla oblongata	Brain medulla oblongata	Brain			Uni-ZAP XR
S0036	Human Substantia Nigra	Human Substantia Nigra				Uni-ZAP XR
S0037	Smooth muscle, IL1b induced	Smooth muscle	Pulmana ry artery	Cell Line		Uni-ZAP XR
S0038	Human Whole Brain #2 - Oligo dT > 1.5Kb	Human Whole Brain #2				ZAP Express
S0039	Hypothalamus	Hypothalamus	Brain			Uni-ZAP XR
S0040	Adipocytes	Human Adipocytes from Osteoclastoma				Uni-ZAP XR
S0042	Testes	Human Testes				ZAP Express
S0044	Prostate BPH	prostate BPH	Prostate		disease	Uni-ZAP XR
S0045	Endothelial cells-control	Endothelial cell	endothel ial cell-lung	Cell Line		Uni-ZAP XR
S0046	Endothelial-induced	Endothelial cell	endothel ial cell-lung	Cell Line		Uni-ZAP XR

S0048	Human Hypothalamus, Alzheimer"s	Human Hypothalamus, Alzheimer"s			disease	Uni-ZAP XR
S0049	Human Brain, Striatum	Human Brain, Striatum				Uni-ZAP XR
S0050	Human Frontal Cortex, Schizophrenia	Human Frontal Cortex, Schizophrenia			disease	Uni-ZAP XR
S0051	Human Hypothalmus,Schizophrenia	Human Hypothalamus, Schizophrenia			disease	Uni-ZAP XR
S0052	neutrophils control	human neutrophils	blood	Cell Line		Uni-ZAP XR
S0053	Neutrophils IL-1 and LPS induced	human neutrophil induced	blood	Cell Line		Uni-ZAP XR
S0106	STRIATUM DEPRESSION		BRAIN		disease	Uni-ZAP XR
S0110	Brain Amygdala Depression		Brain		disease	Uni-ZAP XR
S0112	Hypothalamus		Brain			Uni-ZAP XR
S0114	Anergic T-cell	Anergic T-cell		Cell Line		Uni-ZAP XR
S0116	Bone marrow	Bone marrow	Bone marrow			Uni-ZAP XR
S0118	Smooth muscle control 2	Smooth muscle	Pulmanary artery	Cell Line		Uni-ZAP XR
S0122	Osteoclastoma-normalized A	Osteoclastoma	bone		disease	pBluescript
S0124	Smooth muscle-edited A	Smooth muscle	Pulmanary artery	Cell Line		Uni-ZAP XR
S0126	Osteoblasts	Osteoblasts	Knee	Cell Line		Uni-ZAP XR
S0132	Epithelial-TNFa and INF induced	Airway Epithelial				Uni-ZAP XR
S0134	Apoptotic T-cell	apoptotic cells		Cell Line		Uni-ZAP XR
S0136	PERM TF274	stromal cell	Bone marrow	Cell Line		Lambda ZAP II
S0140	eosinophil-IL5 induced	eosinophil	lung	Cell Line		Uni-ZAP XR
S0142	Macrophage-oxLDL	macrophage-oxidized LDL treated	blood	Cell Line		Uni-ZAP XR
S0144	Macrophage (GM-CSF treated)	Macrophage (GM-CSF treated)				Uni-ZAP XR
S0146	prostate-edited	prostate BPH	Prostate			Uni-ZAP XR
S0148	Normal Prostate	Prostate	prostate			Uni-ZAP XR
S0150	LNCAP prostate cell line	LNCAP Cell Line	Prostate	Cell Line		Uni-ZAP XR
S0152	PC3 Prostate cell line	PC3 prostate cell line				Uni-ZAP XR
S0168	Prostate/LNCAP, subtraction I	PC3 prostate cell line				pBluescript
S0174	Prostate-BPH subtracted II	Human Prostate BPH				pBluescript
S0176	Prostate, normal, subtraction I	Prostate	prostate			Uni-ZAP XR
S0180	Bone Marrow Stroma, TNF&LPS ind	Bone Marrow Stroma, TNF & LPS induced			disease	Uni-ZAP XR
S0182	Human B Cell 8866	Human B- Cell 8866				Uni-ZAP XR
S0188	Prostate,BPH, Lib 2	Human Prostate BPH			disease	pSport1
S0190	Prostate BPH,Lib 2,	Human Prostate				pSport1

	subtracted	BPH				
S0192	Synovial Fibroblasts (control)	Synovial Fibroblasts				pSport1
S0194	Synovial hypoxia	Synovial Fibroblasts				pSport1
S0196	Synovial IL-1/TNF stimulated	Synovial Fibroblasts				pSport1
S0206	Smooth Muscle-HASTE normalized	Smooth muscle	Pulmana ry artery	Cell Line		pBluescript
S0208	Messangial cell, frac 1	Messangial cell				pSport1
S0210	Messangial cell, frac 2	Messangial cell				pSport1
S0212	Bone Marrow Stromal Cell, untreated	Bone Marrow Stromal Cell,untreated				pSport1
S0214	Human Osteoclastoma, re-excision	Osteoclastoma	bone		disease	Uni-ZAP XR
S0216	Neutrophils IL-1 and LPS induced	human neutrophil induced	blood	Cell Line		Uni-ZAP XR
S0218	Apoptotic T-cell, re-excision	apoptotic cells		Cell Line		Uni-ZAP XR
S0220	H. hypothalamus, frac A;re-excision	Hypothalamus	Brain			ZAP Express
S0222	H. Frontal cortex,epileptic;re-excision	H. Brain, Frontal Cortex, Epileptic	Brain		disease	Uni-ZAP XR
S0240	PYGD	PYGD				PCRII
S0242	Synovial Fibroblasts (Il1/TNF), subt	Synovial Fibroblasts				pSport1
S0250	Human Osteoblasts II	Human Osteoblasts	Femur		disease	pCMVSport 2.0
S0256	7TM-PHMIX	PBLS, 7TM receptor enriched				PCRII
S0258	7TM-PNMIX	PBLS, 7TM receptor enriched				PCRII
S0260	Spinal Cord, re-excision	Spinal cord	spinal cord			Uni-ZAP XR
S0262	PYCS	Human Antrum (PY_CS)				PCRII
S0270	PTMIX	PTMIX (Human Thymus)	Thymus			PCRII
S0276	Synovial hypoxia-RSF subtracted	Synovial fobroblasts (rheumatoid)	Synovia l tissue			pSport1
S0278	H Macrophage (GM-CSF treated), re-excision	Macrophage (GM-CSF treated)				Uni-ZAP XR
S0280	Human Adipose Tissue, re-excision	Human Adipose Tissue				Uni-ZAP XR
S0282	Brain Frontal Cortex, re-excision	Brain frontal cortex	Brain			Lambda ZAP II
S0290	H7TMCTB (Brain)	7TMCTB (Brain)	Kidney			PCRII
S0292	Osteoarthritis (OA-4)	Human Osteoarthritic Cartilage	Bone		disease	pSport1
S0294	Larynx tumor	Larynx tumor	Larynx, vocal cord		disease	pSport1
S0296	Normal lung	Normal lung	Lung			pSport1
S0298	Bone marrow stroma,treated	Bone marrow stroma,treatedSB	Bone marrow			pSport1
S0300	Frontal	Frontal Lobe	Brain			Uni-ZAP XR

	lobe,dementia;re-excision	dementia/Alzheimer's				
S0306	Larynx normal #10 261-273	Larynx normal				pSport1
S0308	Spleen/normal	Spleen normal				pSport1
S0310	Normal trachea	Normal trachea				pSport1
S0312	Human osteoarthritic;fraction II	Human osteoarthritic cartilage			disease	pSport1
S0314	Human osteoarthritis;fraction I	Human osteoarthritic cartilage			disease	pSport1
S0316	Human Normal Cartilage,Fraction I	Human Normal Cartilage				pSport1
S0318	Human Normal Cartilage Fraction II	Human Normal Cartilage				pSport1
S0320	Human Larynx	Larynx	Epiglottis			pSport1
S0322	Siebben Polyposis	Siebben Polyposis				pSport1
S0324	Human Brain	Brain	Cerebellum			pSport1
S0326	Mammary Gland	Mammary Gland	Whole mammary gland			pSport1
S0328	Palate carcinoma	Palate carcinoma	Uvula		disease	pSport1
S0330	Palate normal	Palate normal	Uvula			pSport1
S0332	Pharynx carcinoma	Pharynx carcinoma	Hypopharynx			pSport1
S0334	Human Normal Cartilage Fraction III	Human Normal Cartilage				pSport1
S0336	Human Normal Cartilage Fraction IV	Human Normal Cartilage				pSport1
S0338	Human Osteoarthritic Cartilage Fraction III	Human osteoarthritic cartilage			disease	pSport1
S0340	Human Osteoarthritic Cartilage Fraction IV	Human osteoarthritic cartilage			disease	pSport1
S0342	Adipocytes;re-excision	Human Adipocytes from Osteoclastoma				Uni-ZAP XR
S0344	Macrophage-oxLDL; re-excision	macrophage-oxidized LDL treated	blood	Cell Line		Uni-ZAP XR
S0346	Human Amygdala;re-excision	Amygdala				Uni-ZAP XR
S0348	Cheek Carcinoma	Cheek Carcinoma			disease	pSport1
S0350	Pharynx Carcinoma	Pharynx carcinoma	Hypopharynx		disease	pSport1
S0352	Larynx Carcinoma	Larynx carcinoma			disease	pSport1
S0354	Colon Normal II	Colon Normal	Colon			pSport1
S0356	Colon Carcinoma	Colon Carcinoma	Colon		disease	pSport1
S0358	Colon Normal III	Colon Normal	Colon			pSport1
S0360	Colon Tumor II	Colon Tumor	Colon		disease	pSport1
S0362	Human Gastrocnemius	Gastrocnemius muscle				pSport1
S0364	Human Quadriceps	Quadriceps muscle				pSport1
S0366	Human Soleus	Soleus Muscle				pSport1
S0368	Human Pancreatic Langerhans	Islets of Langerhans				pSport1

S0370	Larynx carcinoma II	Larynx carcinoma			disease	pSport1
S0372	Larynx carcinoma III	Larynx carcinoma			disease	pSport1
S0374	Normal colon	Normal colon				pSport1
S0376	Colon Tumor	Colon Tumor			disease	pSport1
S0378	Pancreas normal PCA4 No	Pancreas Normal PCA4 No				pSport1
S0380	Pancreas Tumor PCA4 Tu	Pancreas Tumor PCA4 Tu			disease	pSport1
S0382	Larynx carcinoma IV	Larynx carcinoma			disease	pSport1
S0384	Tongue carcinoma	Tongue carcinoma			disease	pSport1
S0386	Human Whole Brain, re-excision	Whole brain	Brain			ZAP Express
S0388	Human Hypothalamus,schizophrenia, re-excision	Human Hypothalamus, Schizophrenia			disease	Uni-ZAP XR
S0390	Smooth muscle, control; re-excision	Smooth muscle	Pulmanary artery	Cell Line		Uni-ZAP XR
S0392	Salivary Gland	Salivary gland; normal				pSport1
S0394	Stomach;normal	Stomach; normal				pSport1
S0396	Uterus; normal	Uterus; normal				pSport1
S0398	Testis; normal	Testis; normal				pSport1
S0400	Brain; normal	Brain; normal				pSport1
S0402	Adrenal Gland,normal	Adrenal gland; normal				pSport1
S0404	Rectum normal	Rectum, normal				pSport1
S0406	Rectum tumour	Rectum tumour				pSport1
S0408	Colon, normal	Colon, normal				pSport1
S0410	Colon, tumour	Colon, tumour				pSport1
S0412	Temporal cortex-Alzheizmer; subtracted	Temporal cortex, alzheimer			disease	Other
S0414	Hippocampus, Alzheimer Subtracted	Hippocampus, Alzheimer Subtracted				Other
S0418	CHME Cell Line;treated 5 hrs	CHME Cell Line; treated				pCMVSport 3.0
S0420	CHME Cell Line,untreated	CHME Cell line, untreatetd				pSport1
S0422	Mo7e Cell Line GM-CSF treated (1ng/ml)	Mo7e Cell Line GM-CSF treated (1ng/ml)				pCMVSport 3.0
S0424	TF-1 Cell Line GM-CSF Treated	TF-1 Cell Line GM-CSF Treated				pSport1
S0426	Monocyte activated; re-excision	Monocyte-activated	blood	Cell Line		Uni-ZAP XR
S0428	Neutrophils control; re-excision	human neutrophils	blood	Cell Line		Uni-ZAP XR
S0430	Aryepiglottis Normal	Aryepiglottis Normal				pSport1
S0432	Sinus piniformis Tumour	Sinus piniformis Tumour				pSport1
S0434	Stomach Normal	Stomach Normal			disease	pSport1
S0436	Stomach Tumour	Stomach Tumour			disease	pSport1
S0438	Liver Normal Met5No	Liver Normal Met5No				pSport1
S0440	Liver Tumour Met 5 Tu	Liver Tumour				pSport1
S0442	Colon Normal	Colon Normal				pSport1
S0444	Colon Tumor	Colon Tumour			disease	pSport1

S0446	Tongue Tumour	Tongue Tumour				pSport1
S0448	Larynx Normal	Larynx Normal				pSport1
S0450	Larynx Tumour	Larynx Tumour				pSport1
S0452	Thymus	Thymus				pSport1
S0454	Placenta	Placenta	Placenta			pSport1
S0456	Tongue Normal	Tongue Normal				pSport1
S0458	Thyroid Normal (SDCA2 No)	Thyroid normal				pSport1
S0460	Thyroid Tumour	Thyroid Tumour				pSport1
S0462	Thyroid Thyroiditis	Thyroid Thyroiditis				pSport1
S0464	Larynx Normal	Larynx Normal				pSport1
S0466	Larynx Tumor	Larynx Tumor			disease	pSport1
S0468	Ea.hy.926 cell line	Ea.hy.926 cell line				pSport1
S0470	Adenocarcinoma	PYFD			disease	pSport1
S0472	Lung Mesothelium	PYBT				pSport1
S0474	Human blood platelets	Platelets	Blood platelets			Other
S0665	Human Amygdala; re-excission	Amygdala				Uni-ZAP XR
S3012	Smooth Muscle Serum Treated, Norm	Smooth muscle	Pulmanary artery	Cell Line		pBluescript
S3014	Smooth muscle, serum induced,re-exc	Smooth muscle	Pulmanary artery	Cell Line		pBluescript
S3018	TH1 cells	TH1 cells				Uni-ZAP XR
S3020	TH2 cells	TH2 cells				Uni-ZAP XR
S6014	H. hypothalamus, frac A	Hypothalamus	Brain			ZAP Express
S6016	H. Frontal Cortex, Epileptic	H. Brain, Frontal Cortex, Epileptic	Brain		disease	Uni-ZAP XR
S6022	H. Adipose Tissue	Human Adipose Tissue				Uni-ZAP XR
S6024	Alzheimers, spongy change	Alzheimer"s/Spongy change	Brain		disease	Uni-ZAP XR
S6026	Frontal Lobe, Dementia	Frontal Lobe dementia/Alzheimer''s	Brain			Uni-ZAP XR
S6028	Human Manic Depression Tissue	Human Manic depression tissue	Brain		disease	Uni-ZAP XR
T0001	Human Brown Fat	Brown Fat				pBluescript SK-
T0002	Activated T-cells	Activated T-Cell, PBL fraction	Blood	Cell Line		pBluescript SK-
T0003	Human Fetal Lung	Human Fetal Lung				pBluescript SK-
T0004	Human White Fat	Human White Fat				pBluescript SK-
T0006	Human Pineal Gland	Human Pinneal Gland				pBluescript SK-
T0007	Colon Epithelium	Colon Epithelium				pBluescriptISK -
T0008	Colorectal Tumor	Colorectal Tumor			disease	pBluescript SK-
T0010	Human Infant Brain	Human Infant Brain				Other
T0023	Human Pancreatic Carcinoma	Human Pancreatic Carcinoma			disease	pBluescript SK-
T0027	Human Prostate Epithelium	Human Prostate Epithelium				pBluescript SK-
T0039	HSA 172 Cells	Human HSA172 cell line				pBluescript SK-

T0040	HSC172 cells	SA172 Cells				pBluescript SK-
T0041	Jurkat T-cell G1 phase	Jurkat T-cell				pBluescript SK-
T0042	Jurkat T-Cell, S phase	Jurkat T-Cell Line				pBluescript SK-
T0048	Human Aortic Endothelium	Human Aortic Endothilium				pBluescript SK-
T0049	Aorta endothelial cells + TNF-a	Aorta endothelial cells				pBluescript SK-
T0060	Human White Adipose	Human White Fat				pBluescript SK-
T0067	Human Thyroid	Human Thyroid				pBluescript SK-
T0068	Normal Ovary, Premenopausal	Normal Ovary, Premenopausal				pBluescript SK-
T0069	Human Uterus, normal	Human Uterus, normal				pBluescript SK-
T0071	Human Bone Marrow	Human Bone Marrow				pBluescript SK-
T0078	Human Liver, normal adult	Human Liver, normal Adult				pBluescript SK-
T0079	Human Kidney, normal Adult	Human Kidney, normal Adult				pBluescript SK-
T0082	Human Adult Retina	Human Adult Retina				pBluescript SK-
T0086	Human Pancreatic Carcinoma -- Screened	Human Pancreatic Carcinoma			disease	pBluescript SK-
T0087	Alzheimer"s, exon trap,712P				disease	pAMP
T0090	Liver, normal					pBluescript SK-
T0103	Human colon carcinoma (HCC) cell line					pBluescript SK-
T0104	HCC cell line metastisis to liver					pBluescript SK-
T0109	Human (HCC) cell line liver (mouse) metastasis, remake					pBluescript SK-
T0110	Human colon carcinoma (HCC) cell line, remake					pBluescript SK-
T0112	Human (Caco-2) cell line, adenocarcinoma, colon					pBluescript SK-
T0114	Human (Caco-2) cell line, adenocarcinoma, colon, remake					pBluescript SK-
T0115	Human Colon Carcinoma (HCC) cell line					pBluescript SK-
L0002	Atrium cDNA library Human heart					
L0005	Clontech human aorta polyA+ mRNA (#6572)					
L0010	GeneTrack, 4p16.3 JM Rommens					
L0021	Human adult					

	(K.Okubo)					
L0022	Human adult lung 3" directed MboI cDNA					
L0032	Human chromosome 12p cDNAs					
L0034	Human chromosome 14					
L0040	Human colon mucosa					
L0041	Human epidermal keratinocyte					
L0043	Human HaCaT keratinocyte cDNA					
L0044	Human K562 erythroleukemic cells					
L0052	Human normalized K562-cDNA					
L0053	Human pancreatic tumor					
L0055	Human promyelocyte					
L0060	Human thymus NSTH II					
L0065	Liver HepG2 cell line.					
L0070	Selected chromosome 21 cDNA library					
L0096	Subtracted human retina					
L0097	Subtracted human retinal pigment epithelium (RPE)					
L0103	DKFZphamy1	amygdala				
L0105	Human aorta polyA+ (TFujiwara)	aorta				
L0109	Human brain cDNA	brain				
L0118	Human fetal brain S. Meier-Ewert	brain				
L0140	Human pancreatic cancer (CWallrapp)	pancreatic cancer				
L0142	Human placenta cDNA (TFujiwara)	placenta				
L0143	Human placenta polyA+ (TFujiwara)	placenta				
L0149	DKFZphsnu1	subthalamic nucleus				
L0152	DKFZphthml	thymus				
L0157	Human fetal brain (TFujiwara)		brain			
L0158	Human fetal brain QBoqin		brain			
L0163	Human heart cDNA (YNakamura)		heart			
L0171	Human lung adenocarcinoma A549	lung adenocarcinoma		A549		
L0181	HeLa cDNA (T.Noma)			HeLa		
L0185	Human immortalized fibroblasts (H.L.Ozer)			HS74 and its SV40-transformed sublines		
L0194	Human pancreatic cancer cell line Patu	pancreatic cancer		Patu 8988t		

	8988t					
L0309	Human E8CASS	breast adenocarcinoma		E8CASS; variant of MCF7		
L0351	Infant brain, Bento Soares					BA, M13-derived
L0352	Normalized infant brain, Bento Soares					BA, M13-derived
L0353	21q Placenta, F. Tassone and K. Gardiner					Bluescript
L0354	JG, Human foetal Kidney tissue					Bluescript
L0355	P, Human foetal Brain Whole tissue					Bluescript
L0356	S, Human foetal Adrenals tissue					Bluescript
L0360	Y, Human Placenta tissue					Bluescript KS II+
L0361	Stratagene ovary (#937217)		ovary			Bluescript SK
L0362	Stratagene ovarian cancer (#937219)					Bluescript SK-
L0363	NCI_CGAP_GC2	germ cell tumor				Bluescript SK-
L0364	NCI_CGAP_GC5	germ cell tumor				Bluescript SK-
L0365	NCI_CGAP_Phe1	pheochromocytoma				Bluescript SK-
L0366	Stratagene schizo brain S11	schizophrenic brain S-11 frontal lobe				Bluescript SK-
L0367	NCI_CGAP_Sch1	Schwannoma tumor				Bluescript SK-
L0368	NCI_CGAP_SS1	synovial sarcoma				Bluescript SK-
L0369	NCI_CGAP_AA1	adrenal adenoma	adrenal gland			Bluescript SK-
L0370	Johnston frontal cortex	pooled frontal lobe	brain			Bluescript SK-
L0371	NCI_CGAP_Br3	breast tumor	breast			Bluescript SK-
L0372	NCI_CGAP_Co12	colon tumor	colon			Bluescript SK-
L0373	NCI_CGAP_Co11	tumor	colon			Bluescript SK-
L0374	NCI_CGAP_Co2	tumor	colon			Bluescript SK-
L0375	NCI_CGAP_Kid6	kidney tumor	kidney			Bluescript SK-
L0376	NCI_CGAP_Lar1	larynx	larynx			Bluescript SK-
L0378	NCI_CGAP_Lu1	lung tumor	lung			Bluescript SK-
L0379	NCI_CGAP_Lym3	lymphoma	lymph node			Bluescript SK-
L0381	NCI_CGAP_HN4	squamous cell carcinoma	pharynx			Bluescript SK-
L0382	NCI_CGAP_Pr25	epithelium (cell line)	prostate			Bluescript SK-
L0383	NCI_CGAP_Pr24	invasive tumor (cell line)	prostate			Bluescript SK-
L0384	NCI_CGAP_Pr23	prostate tumor	prostate			Bluescript SK-
L0385	NCI_CGAP_Gas1	gastric tumor	stomach			Bluescript SK-
L0386	NCI_CGAP_HN3	squamous cell carcinoma from base of tongue	tongue			Bluescript SK-
L0387	NCI_CGAP_GCB0	germinal center B-cells	tonsil			Bluescript SK-
L0388	NCI_CGAP_HN6	normal gingiva (cell line from immortalized kerati				Bluescript SK-
L0389	NCI_CGAP_HN5	normal gingiva (cell line from primary				Bluescript SK-

		keratinocyt				
L0393	B, Human Liver tissue					gt11
L0394	H, Human adult Brain Cortex tissue					gt11
L0411	1-NIB					Lafmid BA
L0414	b4HB3MA					Lafmid BA
L0415	b4HB3MA Cot8-HAP-Ft					Lafmid BA
L0417	b4HB3MA-Cot0.38-HAP-Ft-6					Lafmid BA
L0418	b4HB3MA-Cot109+10-Bio					Lafmid BA
L0420	b4HB3MA-Cot109+103-Bio					Lafmid BA
L0422	b4HB3MA-Cot12-HAP-B					Lafmid BA
L0423	b4HB3MA-Cot12-HAP-Ft					Lafmid BA
L0426	b4HB3MA-Cot51.5-HAP-Ft					Lafmid BA
L0427	b4HB3MA-FT20%-Biotin					Lafmid BA
L0430	Cot250Ft-b4HB3MA					Lafmid BA
L0434	Infant brain library of Dr. M. Soares					lafmid BA
L0435	Infant brain, LLNL array of Dr. M. Soares 1NIB					lafmid BA
L0437	N-b4HB3MA-Cot109					Lafmid BA
L0438	normalized infant brain cDNA	total brain	brain			lafmid BA
L0439	Soares infant brain 1NIB		whole brain			Lafmid BA
L0440	1HB3MK					Lafmid BK
L0442	4HB3MK					Lafmid BK
L0443	b4HB3MK					Lafmid BK
L0444	HB3MK					Lafmid BK
L0448	3HFLSK20					Lafmid K
L0451	N3HFLSK20					Lafmid K
L0455	Human retina cDNA randomly primed sublibrary	retina	eye			lambda gt10
L0456	Human retina cDNA Tsp509I-cleaved sublibrary	retina	eye			lambda gt10
L0459	Adult heart, Clontech					Lambda gt11
L0460	Adult heart, Lambda gt11					Lambda gt11
L0462	WATM1					lambda gt11
L0465	TEST1, Human adult Testis tissue					lambda nm1149
L0468	HE6W					lambda zap
L0469	T, Human adult Rhabdomyosarcoma cell-line					Lambda Zap
L0470	BL29 Burkitt"s lymphoma, Pascalis Sideras					lambda ZAP 2
L0471	Human fetal heart,					Lambda ZAP

	Lambda ZAP Express					Express
L0475	KG1-a Lambda Zap Express cDNA library			KG1-a		Lambda Zap Express (Stratagene)
L0476	Fetal brain, Stratagene					Lambda ZAP II
L0477	HPLA CCLee	placenta				Lambda ZAP II
L0480	Stratagene cat#937212 (1992)					Lambda ZAP, pBluescript SK(-)
L0481	CD34+DIRECTIONAL					Lambda ZAPII
L0483	Human pancreatic islet					Lambda ZAPII
L0485	STRATAGENE Human skeletal muscle cDNA library, cat. #936215.	skeletal muscle	leg muscle			Lambda ZAPII
L0493	NCI_CGAP_Ov26	papillary serous carcinoma	ovary			pAMP1
L0497	NCI_CGAP_HSC4	CD34+, CD38- from normal bone marrow donor	bone marrow			pAMP1
L0498	NCI_CGAP_HSC3	CD34+, T negative, patient with chronic myelogenou	bone marrow			pAMP1
L0499	NCI_CGAP_HSC2	stem cell 34+/38+	bone marrow			pAMP1
L0500	NCI_CGAP_Brn20	oligodendroglioma	brain			pAMP1
L0501	NCI_CGAP_Brn21	oligodendroglioma	brain			pAMP1
L0502	NCI_CGAP_Br15	adenocarcinoma	breast			pAMP1
L0503	NCI_CGAP_Br17	adenocarcinoma	breast			pAMP1
L0504	NCI_CGAP_Br13	breast carcinoma in situ	breast			pAMP1
L0505	NCI_CGAP_Br12	invasive carcinoma	breast			pAMP1
L0506	NCI_CGAP_Br16	lobullar carcinoma in situ	breast			pAMP1
L0507	NCI_CGAP_Br14	normal epithelium	breast			pAMP1
L0508	NCI_CGAP_Lu25	bronchioalveolar carcinoma	lung			pAMP1
L0509	NCI_CGAP_Lu26	invasive adenocarcinoma	lung			pAMP1
L0510	NCI_CGAP_Ov33	borderline ovarian carcinoma	ovary			pAMP1
L0511	NCI_CGAP_Ov34	borderline ovarian carcinoma	ovary			pAMP1
L0512	NCI_CGAP_Ov36	borderline ovarian carcinoma	ovary			pAMP1
L0513	NCI_CGAP_Ov37	early stage papillary serous carcinoma	ovary			pAMP1
L0514	NCI_CGAP_Ov31	papillary serous carcinoma	ovary			pAMP1
L0515	NCI_CGAP_Ov32	papillary serous carcinoma	ovary			pAMP1
L0517	NCI_CGAP_Pr1					pAMP10
L0518	NCI_CGAP_Pr2					pAMP10
L0519	NCI_CGAP_Pr3					pAMP10
L0520	NCI_CGAP_Alv1	alveolar rhabdomyosarcoma				pAMP10

L0521	NCI_CGAP_Ew1	Ewing"s sarcoma				pAMP10
L0522	NCI_CGAP_Kid1	kidney				pAMP10
L0523	NCI_CGAP_Lip2	liposarcoma				pAMP10
L0524	NCI_CGAP_Li1	liver				pAMP10
L0525	NCI_CGAP_Li2	liver				pAMP10
L0526	NCI_CGAP_Pr12	metastatic prostate bone lesion				pAMP10
L0527	NCI_CGAP_Ov2	ovary				pAMP10
L0528	NCI_CGAP_Pr5	prostate				pAMP10
L0529	NCI_CGAP_Pr6	prostate				pAMP10
L0530	NCI_CGAP_Pr8	prostate				pAMP10
L0532	NCI_CGAP_Thy1	thyroid				pAMP10
L0533	NCI_CGAP_HSC1	stem cells	bone marrow			pAMP10
L0534	Chromosome 7 Fetal Brain cDNA Library	brain	brain			pAMP10
L0535	NCI_CGAP_Br5	infiltrating ductal carcinoma	breast			pAMP10
L0536	NCI_CGAP_Br4	normal ductal tissue	breast			pAMP10
L0537	NCI_CGAP_Ov6	normal cortical stroma	ovary			pAMP10
L0538	NCI_CGAP_Ov5	normal surface epithelium	ovary			pAMP10
L0539	Chromosome 7 Placental cDNA Library		placenta			pAMP10
L0540	NCI_CGAP_Pr10	invasive prostate tumor	prostate			pAMP10
L0541	NCI_CGAP_Pr7	low-grade prostatic neoplasia	prostate			pAMP10
L0542	NCI_CGAP_Pr11	normal prostatic epithelial cells	prostate			pAMP10
L0543	NCI_CGAP_Pr9	normal prostatic epithelial cells	prostate			pAMP10
L0544	NCI_CGAP_Pr4	prostatic intraepithelial neoplasia - high grade	prostate			pAMP10
L0545	NCI_CGAP_Pr4.1	prostatic intraepithelial neoplasia - high grade	prostate			pAMP10
L0546	NCI_CGAP_Pr18	stroma	prostate			pAMP10
L0547	NCI_CGAP_Pr16	tumor	prostate			pAMP10
L0549	NCI_CGAP_HN10	carcinoma in situ from retromolar trigone				pAMP10
L0550	NCI_CGAP_HN9	normal squamous epithelium from retromolar trigone				pAMP10
L0551	NCI_CGAP_HN7	normal squamous epithelium, floor of mouth				pAMP10
L0552	NCI_CGAP_HN8	well-differentiated invasive carcinoma, floor of m				pAMP10
L0553	NCI_CGAP_Co22	colonic adenocarcinoma	colon			pAMP10
L0554	NCI_CGAP_Li8		liver			pAMP10

L0555	NCI_CGAP_Lu34	large cell carcinoma	lung			pAMP10
L0556	NCI_CGAP_Lu34.1	large cell carcinoma	lung			pAMP10
L0558	NCI_CGAP_Ov40	endometrioid ovarian metastasis	ovary			pAMP10
L0559	NCI_CGAP_Ov39	papillary serous ovarian metastasis	ovary			pAMP10
L0560	NCI_CGAP_HN12	moderate to poorly differentiated invasive carcino	tongue			pAMP10
L0561	NCI_CGAP_HN11	normal squamous epithelium	tongue			pAMP10
L0562	Chromosome 7 HeLa cDNA Library			HeLa cell line; ATCC		pAMP10
L0563	Human Bone Marrow Stromal Fibroblast	bone marrow				pBluescript
L0564	Jia bone marrow stroma	bone marrow stroma				pBluescript
L0565	Normal Human Trabecular Bone Cells	Bone	Hip			pBluescript
L0579	Human fetal brain QBoqin2	cerebrum and cerebellum				pBluescript SK
L0581	Stratagene liver (#937224)		liver			pBluescript SK
L0584	Stratagene cDNA library Human heart, cat#936208					pBluescript SK(+)
L0586	HTCDL1					pBluescript SK(-)
L0587	Stratagene colon HT29 (#937221)					pBluescript SK-
L0588	Stratagene endothelial cell 937223					pBluescript SK-
L0589	Stratagene fetal retina 937202					pBluescript SK-
L0590	Stratagene fibroblast (#937212)					pBluescript SK-
L0591	Stratagene HeLa cell s3 937216					pBluescript SK-
L0592	Stratagene hNT neuron (#937233)					pBluescript SK-
L0593	Stratagene neuroepithelium (#937231)					pBluescript SK-
L0594	Stratagene neuroepithelium NT2RAMI 937234					pBluescript SK-
L0595	Stratagene NT2 neuronal precursor 937230	neuroepithelial cells	brain			pBluescript SK-
L0596	Stratagene colon (#937204)		colon			pBluescript SK-
L0597	Stratagene corneal stroma (#937222)		cornea			pBluescript SK-
L0598	Morton Fetal Cochlea	cochlea	ear			pBluescript SK-
L0599	Stratagene lung (#937210)		lung			pBluescript SK-
L0600	Weizmann Olfactory	olfactory epithelium	nose			pBluescript

	Epithelium					SK-
L0601	Stratagene pancreas (#937208)		pancreas			pBluescript SK-
L0602	Pancreatic Islet	pancreatic islet	pancreas			pBluescript SK-
L0603	Stratagene placenta (#937225)		placenta			pBluescript SK-
L0604	Stratagene muscle 937209	muscle	skeletal muscle			pBluescript SK-
L0605	Stratagene fetal spleen (#937205)	fetal spleen	spleen			pBluescript SK-
L0606	NCI_CGAP_Lym5	follicular lymphoma	lymph node			pBluescript SK-
L0607	NCI_CGAP_Lym6	mantle cell lymphoma	lymph node			pBluescript SK-
L0608	Stratagene lung carcinoma 937218	lung carcinoma	lung	NCI-H69		pBluescript SK-
L0609	Schiller astrocytoma	astrocytoma	brain			pBluescript SK- (Stratagene)
L0611	Schiller meningioma	meningioma	brain			pBluescript SK- (Stratagene)
L0612	Schiller oligodendroglioma	oligodendroglioma	brain			pBluescript SK- (Stratagene)
L0615	22 week old human fetal liver cDNA library					pBluescriptII SK(-)
L0616	Chromosome 21 exon					pBluescriptIIK S+
L0622	HM1					pcDNAII (Invitrogen)
L0623	HM3	pectoral muscle (after mastectomy)				pcDNAII (Invitrogen)
L0625	NCI_CGAP_AR1	bulk alveolar tumor				pCMV-SPORT2
L0626	NCI_CGAP_GC1	bulk germ cell seminoma				pCMV-SPORT2
L0627	NCI_CGAP_Co1	bulk tumor	colon			pCMV-SPORT2
L0628	NCI_CGAP_Ov1	ovary bulk tumor	ovary			pCMV-SPORT2
L0629	NCI_CGAP_Mel3	metastatic melanoma to bowel	bowel (skin primary)			pCMV-SPORT4
L0630	NCI_CGAP_CNS1	substantia nigra	brain			pCMV-SPORT4
L0631	NCI_CGAP_Br7		breast			pCMV-SPORT4
L0632	NCI_CGAP_Li5	hepatic adenoma	liver			pCMV-SPORT4
L0633	NCI_CGAP_Lu6	small cell carcinoma	lung			pCMV-SPORT4
L0634	NCI_CGAP_Ov8	serous adenocarcinoma	ovary			pCMV-SPORT4
L0635	NCI_CGAP_PNS1	dorsal root ganglion	peripheral nervous system			pCMV-SPORT4

L0636	NCI_CGAP_Pit1	four pooled pituitary adenomas	brain			pCMV-SPORT6
L0637	NCI_CGAP_Brn53	three pooled meningiomas	brain			pCMV-SPORT6
L0638	NCI_CGAP_Brn35	tumor, 5 pooled (see description)	brain			pCMV-SPORT6
L0639	NCI_CGAP_Brn52	tumor, 5 pooled (see description)	brain			pCMV-SPORT6
L0640	NCI_CGAP_Br18	four pooled high-grade tumors, including two prima	breast			pCMV-SPORT6
L0641	NCI_CGAP_Co17	juvenile granulosa tumor	colon			pCMV-SPORT6
L0642	NCI_CGAP_Co18	moderately differentiated adenocarcinoma	colon			pCMV-SPORT6
L0643	NCI_CGAP_Co19	moderately differentiated adenocarcinoma	colon			pCMV-SPORT6
L0644	NCI_CGAP_Co20	moderately differentiated adenocarcinoma	colon			pCMV-SPORT6
L0645	NCI_CGAP_Co21	moderately differentiated adenocarcinoma	colon			pCMV-SPORT6
L0646	NCI_CGAP_Co14	moderately-differentiated adenocarcinoma	colon			pCMV-SPORT6
L0647	NCI_CGAP_Sar4	five pooled sarcomas, including myxoid liposarcoma	connecti ve tissue			pCMV-SPORT6
L0648	NCI_CGAP_Eso2	squamous cell carcinoma	esophag us			pCMV-SPORT6
L0649	NCI_CGAP_GU1	2 pooled high-grade transitional cell tumors	genitour inary tract			pCMV-SPORT6
L0650	NCI_CGAP_Kid13	2 pooled Wilms" tumors, one primary and one metast	kidney			pCMV-SPORT6
L0651	NCI_CGAP_Kid8	renal cell tumor	kidney			pCMV-SPORT6
L0652	NCI_CGAP_Lu27	four pooled poorly-differentiated adenocarcinomas	lung			pCMV-SPORT6
L0653	NCI_CGAP_Lu28	two pooled squamous cell carcinomas	lung			pCMV-SPORT6
L0654	NCI_CGAP_Lu31		lung, cell line			pCMV-SPORT6
L0655	NCI_CGAP_Lym12	lymphoma, follicular mixed small and large cell	lymph node			pCMV-SPORT6
L0656	NCI_CGAP_Ov38	normal epithelium	ovary			pCMV-SPORT6
L0657	NCI_CGAP_Ov23	tumor, 5 pooled (see description)	ovary			pCMV-SPORT6
L0658	NCI_CGAP_Ov35	tumor, 5 pooled (see description)	ovary			pCMV-SPORT6
L0659	NCI_CGAP_Pan1	adenocarcinoma	pancreas			pCMV-SPORT6

L0661	NCI_CGAP_Mel15	malignant melanoma, metastatic to lymph node	skin			pCMV-SPORT6
L0662	NCI_CGAP_Gas4	poorly differentiated adenocarcinoma with signet r	stomach			pCMV-SPORT6
L0663	NCI_CGAP_Ut2	moderately-differentiated endometrial adenocarcino	uterus			pCMV-SPORT6
L0664	NCI_CGAP_Ut3	poorly-differentiated endometrial adenocarcinoma,	uterus			pCMV-SPORT6
L0665	NCI_CGAP_Ut4	serous papillary carcinoma, high grade, 2 pooled t	uterus			pCMV-SPORT6
L0666	NCI_CGAP_Ut1	well-differentiated endometrial adenocarcinoma, 7	uterus			pCMV-SPORT6
L0667	NCI_CGAP_CML1	myeloid cells, 18 pooled CML cases, BCR/ABL rearra	whole blood			pCMV-SPORT6
L0669	Human MCF7 cDNA subtracted with MDA-MB-231 cDNA	breast adenocarcinoma	breast	MCF7		pCR II [Invitrogen]
L0681	Stanley Frontal SN individual	frontal lobe (see description)	brain			pCR2.1 (Invitrogen)
L0682	Stanley Frontal NB pool 2	frontal lobe (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0683	Stanley Frontal NS pool 2	frontal lobe (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0684	Stanley Frontal SB pool 1	frontal lobe (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0686	Stanley Frontal SN pool 2	frontal lobe (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0687	Stanley Hippocampus NB pool 1	hippocampus (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0689	Stanley Hippocampus SN pool 1	hippocampus (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0695	Human Glialblastoma Cell		Brain	BT-325		PCRII, Invitrogen
L0697	Testis 1					PGEM 5zf(+)
L0698	Testis 2					PGEM 5zf(+)
L0717	Gessler Wilms tumor					pSPORT1
L0718	Testis 5					pSPORT1
L0731	Soares_pregnant_uterus_NbHPU		uterus			pT7T3-Pac
L0738	Human colorectal cancer					pT7T3D
L0739	Soares placenta Nb2HP-B					pT7T3D (Pharmacia) with a modified polylinker
L0740	Soares melanocyte 2NbHM	melanocyte				pT7T3D (Pharmacia) with a modified polylinker

L0741	Soares adult brain N2b4HB55Y		brain			pT7T3D (Pharmacia) with a modified polylinker
L0742	Soares adult brain N2b5HB55Y		brain			pT7T3D (Pharmacia) with a modified polylinker
L0743	Soares breast 2NbHBst		breast			pT7T3D (Pharmacia) with a modified polylinker
L0744	Soares breast 3NbHBst		breast			pT7T3D (Pharmacia) with a modified polylinker
L0745	Soares retina N2b4HR	retina	eye			pT7T3D (Pharmacia) with a modified polylinker
L0746	Soares retina N2b5HR	retina	eye			pT7T3D (Pharmacia) with a modified polylinker
L0747	Soares_fetal_heart_NbHH19W		heart			pT7T3D (Pharmacia) with a modified polylinker
L0748	Soares fetal liver spleen 1NFLS		Liver and Spleen			pT7T3D (Pharmacia) with a modified polylinker
L0749	Soares_fetal_liver_spleen_1NFLS_S1		Liver and Spleen			pT7T3D (Pharmacia) with a modified polylinker
L0750	Soares_fetal_lung_NbHL19W		lung			pT7T3D (Pharmacia) with a modified polylinker
L0751	Soares ovary tumor NbHOT	ovarian tumor	ovary			pT7T3D (Pharmacia) with a modified polylinker
L0752	Soares_parathyroid_tumor_NbHPA	parathyroid tumor	parathyroid gland			pT7T3D (Pharmacia) with a modified polylinker
L0753	Soares_pineal_gland		pineal			pT7T3D

	N3HPG		gland			(Pharmacia) with a modified polylinker
L0754	Soares placenta Nb2HP		placenta			pT7T3D (Pharmacia) with a modified polylinker
L0755	Soares_placenta_8to9weeks_2NbHP8to9W		placenta			pT7T3D (Pharmacia) with a modified polylinker
L0756	Soares_multiple_sclerosis_2NbHMSP	multiple sclerosis lesions				pT7T3D (Pharmacia) with a modified polylinker V_TYPE
L0757	Soares_senescent_fibroblasts_NbHSF	senescent fibroblast				pT7T3D (Pharmacia) with a modified polylinker V_TYPE
L0758	Soares_testis_NHT					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0759	Soares_total_fetus_Nb2HF8_9w					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0760	Barstead aorta HPLRB3	aorta				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0761	NCI_CGAP_CLL1	B-cell, chronic lymphotic leukemia				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0762	NCI_CGAP_Br1.1	breast				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0763	NCI_CGAP_Br2	breast				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0764	NCI_CGAP_Co3	colon				pT7T3D-Pac (Pharmacia) with a modified polylinker

L0765	NCI_CGAP_Co4	colon				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0766	NCI_CGAP_GCB1	germinal center B cell				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0767	NCI_CGAP_GC3	pooled germ cell tumors				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0768	NCI_CGAP_GC4	pooled germ cell tumors				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0769	NCI_CGAP_Brn25	anaplastic oligodendroglioma	brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0770	NCI_CGAP_Brn23	glioblastoma (pooled)	brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0771	NCI_CGAP_Co8	adenocarcinoma	colon			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0772	NCI_CGAP_Co10	colon tumor RER+	colon			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0773	NCI_CGAP_Co9	colon tumor RER+	colon			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0774	NCI_CGAP_Kid3		kidney			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0775	NCI_CGAP_Kid5	2 pooled tumors (clear cell type)	kidney			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0776	NCI_CGAP_Lu5	carcinoid	lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0777	Soares_NhHMPu_S1	Pooled human	mixed			pT7T3D-Pac

		melanocyte, fetal heart, and pregnant	(see below)			(Pharmacia) with a modified polylinker
L0778	Barstead pancreas HPLRB1		pancreas			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0779	Soares_NFL_T_GBC_S1		pooled			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0780	Soares_NSF_F8_9W_OT_PA_P_S1		pooled			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0781	Barstead prostate BPH HPLRB4		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0782	NCI_CGAP_Pr21	normal prostate	prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0783	NCI_CGAP_Pr22	normal prostate	prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0784	NCI_CGAP_Lei2	leiomyosarcoma	soft tissue			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0785	Barstead spleen HPLRB2		spleen			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0786	Soares_NbHFB		whole brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0787	NCI_CGAP_Sub1					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0788	NCI_CGAP_Sub2					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0789	NCI_CGAP_Sub3					pT7T3D-Pac (Pharmacia)

						with a modified polylinker
L0790	NCI_CGAP_Sub4					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0791	NCI_CGAP_Sub5					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0792	NCI_CGAP_Sub6					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0793	NCI_CGAP_Sub7					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0794	NCI_CGAP_GC6	pooled germ cell tumors				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0796	NCI_CGAP_Brn50	medulloblastoma	brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0800	NCI_CGAP_Co16	colon tumor, RER+	colon			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0803	NCI_CGAP_Kid11		kidney			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0804	NCI_CGAP_Kid12	2 pooled tumors (clear cell type)	kidney			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0805	NCI_CGAP_Lu24	carcinoid	lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0806	NCI_CGAP_Lu19	squamous cell carcinoma, poorly differentiated (4	lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0807	NCI_CGAP_Ov18	fibrotheoma	ovary			pT7T3D-Pac (Pharmacia) with a

						modified polylinker
L0808	Barstead prostate BPH HPLRB4 1		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0809	NCI_CGAP_Pr28		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0811	BATM2					PTZ18
L2249	Human aortic endothelium	aortic endothelium				
L2250	Human cerebral cortex	cerebral cortex				
L2251	Human fetal lung	Fetal lung				
L2269	NCI_CGAP_Thy11	follicular carcinoma	thyroid			pAMP10
L3872	NCI_CGAP_Skn1		skin, normal, 4 pooled sa			pCMV-SPORT6
L3904	NCI_CGAP_Brn64	glioblastoma with EGFR amplification	brain			pCMV-SPORT6
L3905	NCI_CGAP_Brn67	anaplastic oligodendroglioma with 1p/19q loss	brain			pCMV-SPORT6
L4497	NCI_CGAP_Br22	invasive ductal carcinoma, 3 pooled samples	breast			pCMV-SPORT6
L4500	NCI_CGAP_HN16	moderate to poorly differentiated invasive carcino	mouth			pAMP10
L4501	NCI_CGAP_Sub8					pT7T3D-Pac (Pharmacia) with a modified polylinker
L4559	NCI_CGAP_Thy3	follicular carcinoma	thyroid			pCMV-SPORT6
L4669	NCI_CGAP_Ov41	serous papillary tumor	ovary			pCMV-SPORT6
L4747	NCI_CGAP_Brn41	oligodendroglioma	brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L4775	NCI_CGAP_Thy12	papillary carcinoma	thyroid			pAMP10
L5286	NCI_CGAP_Thy10	medullary carcinoma	thyroid			pAMP10
L5564	NCI_CGAP_HN20		normal head/neck tissue			pAMP1
L5565	NCI_CGAP_Brn66	glioblastoma with probably TP53 mutation and witho	brain			pCMV-SPORT6
L5566	NCI_CGAP_Brn70	anaplastic oligodendroglioma	brain			pCMV-SPORT6.ccdb
L5568	NCI_CGAP_HN21	nasopharyngeal carcinoma	head/neck			pAMP1

L5569	NCI_CGAP_HN17	normal epithelium	nasopharynx			pAMP10
L5574	NCI_CGAP_HN19	normal epithelium	nasopharynx			pAMP10
L5575	NCI_CGAP_Brn65	glioblastoma without EGFR amplification	brain			pCMV-SPORT6
L5622	NCI_CGAP_Skn3		skin			pCMV-SPORT6
L5623	NCI_CGAP_Skn4	squamous cell carcinoma	skin			pCMV-SPORT6

TABLE 5

OMIM Reference	Description
100650	Fetal alcohol syndrome
100650	Alcohol intolerance, acute
100678	ACAT2 deficiency
100690	Myasthenic syndrome, slow-channel congenital, 601462
100730	Myasthenia gravis, neonatal transient
102200	Somatotrophinoma
102578	Leukemia, acute promyelocytic, PML/RARA type
102770	Myoadenylate deaminase deficiency
102772	[AMP deaminase deficiency, erythrocytic]
103050	Autism, succinylpurinemic
103050	Adenylosuccinase deficiency
103581	Albright hereditary osteodystrophy-2
103950	Emphysema due to alpha-2-macroglobulin deficiency
104311	Alzheimer disease-3
104500	Amelogenesis imperfecta-2, hypoplastic local type
104770	Amyloidosis, secondary, susceptibility to
105580	Anal canal carcinoma
106100	Angioedema, hereditary
106150	Hypertension, essential, susceptibility to
106150	Preeclampsia, susceptibility to
106165	Hypertension, essential, 145500
106180	Myocardial infarction, susceptibility to
106210	Peters anomaly
106210	Cataract, congenital, with late-onset corneal dystrophy
106210	Foveal hypoplasia, isolated, 136520
106210	Aniridia
106300	Ankylosing spondylitis
107250	Anterior segment mesenchymal dysgenesis
107271	CD59 deficiency

107300	Antithrombin III deficiency
107470	Atypical mycobacterial infection, familial disseminated, 209950
107470	BCG infection, generalized familial
107470	Tuberculosis, susceptibility to
107670	Apolipoprotein A-II deficiency
107680	ApoA-I and apoC-III deficiency, combined
107680	Corneal clouding, autosomal recessive
107680	Amyloidosis, 3 or more types
107680	Hypertriglyceridemia, one form
107680	Hypoalphalipoproteinemia
107720	Hypertriglyceridemia
107730	Apolipoprotein B-100, ligand-defective
107730	Abetalipoproteinemia
107730	Hyperbetalipoproteinemia
107730	Hypobetalipoproteinemia
107741	Hyperlipoproteinemia, type III
107777	Diabetes insipidus, nephrogenic, autosomal recessive, 222000
107970	Arrhythmogenic right ventricular dysplasia-1
108725	Atherosclerosis, susceptibility to
108800	Atrial septal defect, secundum type
108985	Atrophia areata
109150	Machado-Joseph disease
109270	Renal tubular acidosis, distal, 179800
109270	Spherocytosis, hereditary
109270	[Acanthocytosis, one form]
109270	[Elliptocytosis, Malaysian-Melanesian type]
109270	Hemolytic anemia due to band 3 defect
109400	Basal cell nevus syndrome
109543	Leukemia, chronic lymphocytic, B-cell
109560	Leukemia/lymphoma, B-cell, 3
109565	Lymphoma, B-cell
109565	Lymphoma, diffuse large cell
109700	Hemodialysis-related amyloidosis
110100	Blepharophimosis, epicanthus inversus, and ptosis, type 1
110700	Vivax malaria, susceptibility to
112261	Fibrodysplasia ossificans progressiva
112262	Fibrodysplasia ossificans progressiva, 135100
112410	Hypertension with brachydactyly
113100	Brachydactyly, type C
113300	Brachydactyly type E
113705	Ovarian cancer
113705	Breast cancer-1
113721	Breast cancer
113900	Heart block, progressive familial, type I

114208	Malignant hyperthermia susceptibility 5, 601887
114208	Hypokalemic periodic paralysis, 170400
114290	Campomelic dysplasia with autosomal sex reversal
114550	Hepatocellular carcinoma
114835	Monocyte carboxyesterase deficiency
115500	Acatalasemia
115650	Cataract, anterior polar-1
115660	Cataract, cerulean, type 1
116600	Cataract, posterior polar
116806	Colorectal cancer
116860	Cavernous angiomatous malformations
117700	[Hypoceruloplasminemia, hereditary]
117700	Hemosiderosis, systemic, due to aceruloplasminemia
118210	Charcot-Marie-Tooth neuropathy-2A
118425	Myotonia congenita, dominant, 160800
118425	Myotonia congenita, recessive, 255700
118425	Myotonia levior, recessive
118470	[CETP deficiency]
118485	Polycystic ovary syndrome with hyperandrogenemia
118504	Epilepsy, benign neonatal, type 1, 121200
118504	Epilepsy, nocturnal frontal lobe, 600513
118800	Choreoathetosis, familial paroxysmal
119300	van der Woude syndrome
120070	Alport syndrome, autosomal recessive, 203780
120110	Metaphyseal chondrodysplasia, Schmid type
120120	Epidermolysis bullosa dystrophica, dominant, 131750
120120	Epidermolysis bullosa dystrophica, recessive, 226600
120120	Epidermolysis bullosa, pretibial, 131850
120131	Alport syndrome, autosomal recessive, 203780
120131	Hematuria, familial benign
120180	Ehlers-Danlos syndrome, type III
120180	Ehlers-Danlos syndrome, type IV, 130050
120180	Fibromuscular dysplasia of arteries, 135580
120180	Aneurysm, familial, 100070
120190	Ehlers-Danlos syndrome, type I, 130000
120220	Bethlem myopathy, 158810
120240	Bethlem myopathy, 158810
120250	Bethlem myopathy, 158810
120260	Epiphyseal dysplasia, multiple, type 2, 600204
120290	OSMED syndrome, 215150
120290	Stickler syndrome, type II, 184840
120435	Muir-Torre syndrome, 158320
120435	Colorectal cancer, hereditary, nonpolyposis, type 1 Ovarian cancer

120436	Muir-Torre family cancer syndrome, 158320
120436	Turcot syndrome with glioblastoma, 276300
120436	Colorectal cancer, hereditary nonpolyposis, type 2
120550	C1q deficiency, type A
120570	C1q deficiency, type B
120575	C1q deficiency, type C
120580	C1r/C1s deficiency, combined
120620	SLE susceptibility
120620	CR1 deficiency
120700	C3 deficiency
120810	C4 deficiency
120820	C4 deficiency
120920	Measles, susceptibility to
120950	C8 deficiency, type I
120960	C8 deficiency, type II
121014	Heterotaxia, visceroatrial, autosomal recessive
121050	Contractural arachnodactyly, congenital
121800	Corneal dystrophy, crystalline, Schnyder
122720	Nicotine addiction, protection from
122720	Coumarin resistance, 122700
123270	[Creatine kinase, brain type, ectopic expression of]
123580	Cataract, congenital, autosomal dominant
123620	Cataract, cerulean, type 2, 601547
123660	Cataract, Coppock-like
123829	Melanoma
123940	White sponge nevus, 193900
124030	Parkinsonism, susceptibility to
124030	Debrisoquine sensitivity
124080	CMO II deficiency
124200	Darier disease (keratosis follicularis)
125264	Leukemia, acute nonlymphocytic
125270	Porphyria, acute hepatic
125270	Lead poisoning, susceptibility to
125490	Dentinogenesis imperfecta-1
125852	Insulin-dependent diabetes mellitus-2
126060	Anemia, megaloblastic, due to DHFR deficiency
126090	Hyperphenylalaninemia due to pterin-4a-carbinolamine dehydratase deficiency, 264070
126150	Diphtheria, susceptibility to
126340	Xeroderma pigmentosum, group D, 278730
126391	DNA ligase I deficiency
126451	Schizophrenia, susceptibility to
126452	Autonomic nervous system dysfunction
126452	[Novelty seeking personality]

126600	Doyne honeycomb retinal dystrophy
126600	Drusen, radial, autosomal dominant
126650	Chloride diarrhea, congenital, Finnish type, 214700
126650	Colon cancer
128100	Dystonia-1, torsion
129010	Neuropathy, congenital hypomyelinating, 1
129900	EEC syndrome-1
130410	Glutaricaciduria, type IIB
130500	Elliptocytosis-1
131100	Multiple endocrine neoplasia I
131100	Prolactinoma, hyperparathyroidism, carcinoid syndrome
131100	Carcinoid tumor of lung
131210	Atherosclerosis, susceptibility to
131242	Shah-Waardenburg syndrome, 277580
131400	Eosinophilia, familial
131440	Eosinophilic myeloproliferative disorder
131950	Epidermolysis bullosa, Ogna type
132700	Cylindromatosis
132800	Basal cell carcinoma
132800	Epithelioma, self-healing, squamous 1, Ferguson-Smith type
133170	Erythremia
133171	[Erythrocytosis, familial], 133100
133200	Erythrokeratodermia variabilis
133510	Trichothiodystrophy
133510	Xeroderma pigmentosum, group B
133700	Chondrosarcoma, 215300
133700	Exostoses, multiple, type 1
133701	Exostoses, multiple, type 2
133780	Vitreoretinopathy, exudative, familial
134370	Factor H deficiency
134370	Hemolytic-uremic syndrome, 235400
134370	Membroproliferative glomerulonephritis
134570	Factor XIIIA deficiency
134580	Factor XIIIB deficiency
134638	Systemic lupus erythematosus, susceptibility, 152700
134790	Hyperferritinemia-cataract syndrome, 600886
134820	Dysfibrinogenemia, alpha type, causing bleeding diathesis
134820	Dysfibrinogenemia, alpha type, causing recurrent thrombosis
134820	Amyloidosis, hereditary renal, 105200
134830	Dysfibrinogenemia, beta type
134850	Dysfibrinogenemia, gamma type
134850	Hypofibrinogenemia, gamma type
134934	Thanatophoric dysplasia, types I and II, 187600
134934	Achondroplasia, 100800

134934	Craniosynostosis, nonsyndromic
134934	Crouzon syndrome with acanthosis nigricans
134934	Hypochondroplasia, 146000
135300	Fibromatosis, gingival
135600	Ehlers-Danlos syndrome, type X
135700	Fibrosis of extraocular muscles, congenital, 1
135940	Ichthyosis vulgaris, 146700
136132	[Fish-odor syndrome], 602079
136350	Pfeiffer syndrome, 101600
136435	Ovarian dysgenesis, hypergonadotropic, with normal karyotype, 233300
136530	Male infertility, familial
136550	Macular dystrophy, North Carolina type
136836	Fucosyltransferase-6 deficiency
137350	Amyloidosis, Finnish type, 105120
137600	Iridogoniodysgenesis syndrome
138030	[Hyperproglucagonemia]
138033	Diabetes mellitus, type II
138040	Cortisol resistance
138079	Hyperinsulinism, familial, 602485
138079	MODY, type 2, 125851
138140	Glucose transport defect, blood-brain barrier
138190	Diabetes mellitus, noninsulin-dependent
138320	Hemolytic anemia due to glutathione peroxidase deficiency
138570	Non-insulin dependent diabetes mellitus, susceptibility to
138700	[Apolipoprotein H deficiency]
138971	Kostmann neutropenia, 202700
138981	Pulmonary alveolar proteinosis, 265120
139130	Hypertension, essential, susceptibility to, 145500
139191	Growth hormone deficient dwarfism
139250	Isolated growth hormone deficiency, Illig type with absent GH and Kowarski type with bioinactive GH
139320	Pituitary ACTH secreting adenoma
139320	Pseudohypoparathyroidism, type Ia, 103580
139320	Somatotrophinoma
139320	McCune-Albright polyostotic fibrous dysplasia, 174800
139330	Night blindness, congenital stationary
139350	Epidermolytic hyperkeratosis, 113800
139350	Keratoderma, palmoplantar, nonepidermolytic
139360	Pituitary ACTH-secreting adenoma
141750	Alpha-thalassemia/mental retardation syndrome, type 1
141800	Methemoglobinemias, alpha-
141800	Thalassemias, alpha-
141800	Erythremias, alpha-

141800	Heinz body anemias, alpha-
141850	Thalassemia, alpha-
141850	Erythrocytosis
141850	Heinz body anemia
141850	Hemoglobin H disease
141850	Hypochromic microcytic anemia
141900	Methemoglobinemias, beta-
141900	Sickle cell anemia
141900	Thalassemias, beta-
141900	Erythremias, beta-
141900	HPFH, deletion type
141900	Heinz body anemias, beta-
142000	Thalassemia due to Hb Lepore
142000	Thalassemia, delta-
142200	HPFH, nondeletion type A
142250	HPFH, nondeletion type G
142270	Hereditary persistence of fetal hemoglobin
142335	Hereditary persistence of fetal hemoglobin, heterocellular, Indian type
142410	Non-insulin-dependent diabetes mellitus-2, 601407
142410	Insulin-dependent diabetes mellitus
142410	MODY, type 3, 600496
142470	[Hereditary persistence of fetal hemoglobin, heterocellular]
142600	Hemolytic anemia due to hexokinase deficiency
142640	Thrombophilia due to elevated HRG
142680	Periodic fever, familial
142857	Pemphigoid, susceptibility to
142858	Beryllium disease, chronic, susceptibility to
142946	Holoprosencephaly-4
142959	Hand-foot-uterus syndrome, 140000
142989	Synpolydactyly, type II, 186000
143100	Huntington disease
143200	Wagner syndrome
143200	Erosive vitreoretinopathy
143890	Hypercholesterolemia, familial
144120	Hyperimmunoglobulin G1 syndrome
144200	Epidermolytic palmoplantar keratoderma
145001	Hyperparathyroidism-jaw tumor syndrome
145260	Pseudohypoaldosteronism, type II
145981	Hypocalciuric hypercalcemia, type II
146150	Hypomelanosis of Ito
146150	Hypomelanosis of Ito
146200	Hypoparathyroidism, familial
146740	Neutropenia, alloimmune neonatal

146740	Viral infections, recurrent
146740	Lupus erythematosus, systemic, susceptibility, 152700
146790	Lupus nephritis, susceptibility to
147020	Agammaglobulinemia, 601495
147050	Atopy
147061	Allergy and asthma susceptibility
147110	IgG2 deficiency, selective
147141	Leukemia, acute lymphoblastic
147200	[Kappa light chain deficiency]
147280	Hepatocellular carcinoma
147440	Growth retardation with deafness and mental retardation
147450	Amytrophic lateral sclerosis, due to SOD1 deficiency, 105400
147545	Diabetes mellitus, noninsulin-dependent
147570	Interferon, immune, deficiency
147575	Myelodysplastic syndrome, preleukemic
147575	Myelogenous leukemia, acute
147575	Macrocytic anemia refractory, of 5q- syndrome, 153550
147670	Rabson-Mendenhall syndrome
147670	Diabetes mellitus, insulin-resistant, with acanthosis nigricans
147670	Leprechaunism
147680	Severe combined immunodeficiency due to IL2 deficiency
147781	Atopy, susceptibility to
147790	Leukemia, acute lymphocytic, with 4/11 translocation
147791	Jacobsen syndrome
148040	Epidermolysis bullosa simplex, Koebner, Dowling-Meara, and Weber-Cockayne types, 131900, 131760, 131800
148041	Pachyonychia congenita, Jadassohn-Lewandowsky type, 167200
148043	Meesmann corneal dystrophy, 122100
148065	White sponge nevus, 193900
148066	Epidermolysis bullosa simplex, Koebner, Dowling-Meara, and Weber-Cockayne types, 131900, 131760, 131800
148066	Epidermolysis bullosa simplex, recessive, 601001
148067	Nonepidermolytic palmoplantar keratoderma, 600962
148067	Pachyonychia congenita, Jadassohn-Lewandowsky type, 167200
148069	Pachyonychia congenita, Jackson-Lawler type, 167210
148070	Liver disease, susceptibility to, from hepatotoxins or viruses
148080	Epidermolytic hyperkeratosis, 113800
148370	Keratolytic winter erythema
148500	Tylosis with esophageal cancer
150100	Lactate dehydrogenase-B deficiency
150200	[Placental lactogen deficiency]
150210	Lactoferrin-deficient neutrophils, 245480
150230	Langer-Giedion syndrome
150240	Cutis laxa, marfanoid neonatal type

150250	Larsen syndrome, autosomal dominant
150270	Laryngeal adductor paralysis
150292	Epidermolysis bullosa, Herlitz junctional type, 226700
150310	Epidermolysis bullosa, Herlitz junctional type, 226700
150310	Epidermolysis bullosa, generalized atrophic benign, 226650
151385	Leukemia, acute myeloid
151390	Leukemia, acute T-cell
151440	Leukemia, T-cell acute lymphoblastoid
151670	Hepatic lipase deficiency
152427	Long QT syndrome-2
152445	Vohwinkel syndrome, 124500
152445	Erythrokeratoderma, progressive symmetric, 602036
152760	Hypogonadotropic hypogonadism due to GNRH deficiency, 227200
152790	Precocious puberty, male, 176410
152790	Leydig cell hypoplasia
153455	Cutis laxa, recessive, type I, 219100
153700	Macular dystrophy, vitelliform type
153840	Macular dystrophy, atypical vitelliform
153880	Macular dystrophy, dominant cystoid
154275	Malignant hyperthermia susceptibility 2
154276	Malignant hyperthermia susceptibility 3
154550	Carbohydrate-deficient glycoprotein syndrome, type Ib, 602579
154705	Marfan syndrome, type II
155600	Malignant melanoma, cutaneous
156225	Muscular dystrophy, congenital merosin-deficient
156232	Mesomelic dysplasia, Kantaputra type
156490	Neuroblastoma
156850	Cataract, congenital, with microphthalmia
157170	Holoprosencephaly-2
157640	PEO with mitochondrial DNA deletions, type 1
157655	Lactic acidosis due to defect in iron-sulfur cluster of complex I
157900	Moebius syndrome
158590	Spinal muscular atrophy-4
158900	Facioscapulohumeral muscular dystrophy-1A
159000	Muscular dystrophy, limb-girdle, type 1A
159001	Muscular dystrophy, limb-girdle, type 1B
159440	Charcot-Marie-Tooth neuropathy-1B, 118200
159440	Dejerine-Sottas disease, myelin P-related, 145900
159440	Hypomyelination, congenital
159555	Leukemia, myeloid/lymphoid or mixed-lineage
159595	Leukemia, transient, of Down syndrome
160760	Cardiomyopathy, familial hypertrophic, 1, 192600
160760	Central core disease, one form

160781	Cardiomyopathy, hypertrophic, mid-left ventricular chamber type
160900	Myotonic dystrophy
160980	Carney myxoma-endocrine complex
161015	Mitochondrial complex I deficiency, 252010
162100	Neuralgic amyotrophy with predilection for brachial plexus
162200	Neurofibromatosis, type 1
162200	Watson syndrome, 193520
163729	Hypertension, pregnancy-induced
163950	Noonan syndrome-1
163950	Cardiofaciocutaneous syndrome, 115150
164009	Leukemia, acute promyelocytic, NUMA/RARA type
164160	Obesity, severe, due to leptin deficiency
164200	Oculodentodigital dysplasia
164200	Syndactyly, type III, 186100
164500	Spinocerebellar ataxia-7
164731	Ovarian carcinoma, 167000
164860	Renal cell carcinoma, papillary, familial and sporadic
164953	Liposarcoma
165320	Hepatocellular carcinoma
165500	Optic atrophy 1
167000	Ovarian cancer, serous
167250	Paget disease of bone
168000	Paraganglioma, familial nonchromaffin, 1
168360	Paraneoplastic sensory neuropathy
168461	Multiple myeloma, 254250
168461	Parathyroid adenomatosis 1
168461	Centrocytic lymphoma
168468	Metaphyseal chondrodysplasia, Murk Jansen type, 156400
168470	Humoral hypercalcemia of malignancy
168500	Parietal foramina
168610	Parkinsonism-dementia with pallidopontonigral degeneration
169600	Hailey-Hailey disease
170261	Bare lymphocyte syndrome, type I, due to TAP2 deficiency
170500	Myotonia congenita, atypical acetazolamide-responsive
170500	Paramyotonia congenita, 168300
170500	Hyperkalemic periodic paralysis
170995	Zellweger syndrome-2
171050	Colchicine resistance
171060	Cholestasis, progressive familial intrahepatic, type III, 602347
171190	Hypertension, essential, 145500
171650	Lysosomal acid phosphatase deficiency
171760	Hypophosphatasia, adult, 146300
171760	Hypophosphatasia, infantile, 241500
171860	Hemolytic anemia due to phosphofructokinase deficiency

172400	Hemolytic anemia due to glucosephosphate isomerase deficiency
172400	Hydrops fetalis, one form
172411	Colorectal cancer, resistance to
172471	Glycogenosis, hepatic, autosomal
172490	Phosphorylase kinase deficiency of liver and muscle, 261750
173350	Plasminogen Tochigi disease
173350	Plasminogen deficiency, types I and II
173350	Thrombophilia, dysplasminogenemic
173360	Thrombophilia due to excessive plasminogen activator inhibitor
173360	Hemorrhagic diathesis due to PAI1 deficiency
173610	Platelet alpha/delta storage pool deficiency
173850	Polio, susceptibility to
173870	Xeroderma pigmentosum
173870	Fanconi anemia
173910	Polycystic kidney disease, adult, type II
174000	Medullary cystic kidney disease, AD
174900	Polyposis, juvenile intestinal
175100	Turcot syndrome, 276300
175100	Adenomatous polyposis coli
175100	Adenomatous polyposis coli, attenuated
175100	Colorectal cancer
175100	Desmoid disease, hereditary, 135290
175100	Gardner syndrome
176100	Porphyria cutanea tarda
176100	Porphyria, hepatoerythropoietic
176260	Episodic ataxia/myokymia syndrome, 160120
176261	Jervell and Lange-Nielsen syndrome, 220400
176300	[Dystransthyretinemic hyperthyroxinemia]
176300	Carpal tunnel syndrome, familial
176300	Amyloid neuropathy, familial, several allelic types
176300	Amyloidosis, senile systemic
176310	Leukemia, acute pre-B-cell
176450	Sacral agenesis-1
176640	Creutzfeldt-Jakob disease, 123400
176640	Gerstmann-Straussler disease, 137440
176640	Insomnia, fatal familial
176705	Breast cancer, sporadic
176730	Diabetes mellitus, rare form
176730	Hyperproinsulinemia, familial
176730	MODY, one form
176930	Dysprothrombinemia
176930	Hypoprothrombinemia
176960	Pituitary tumor, invasive
177070	Spherocytosis, hereditary, Japanese type

177070	Hermansky-Pudlak syndrome, 203300
177900	Psoriasis susceptibility-1
178300	Ptosis, hereditary congenital, 1
178600	Pulmonary hypertension, familial primary
178640	Pulmonary alveolar proteinosis, congenital, 265120
179095	Male infertility
179450	Ragweed sensitivity
179615	Reticulosis, familial histiocytic, 267700
179615	Severe combined immunodeficiency, B cell-negative, 601457
179616	Severe combined immunodeficiency, B cell-negative, 601457
179755	Renal cell carcinoma, papillary, 1
179820	[Hyperproreninemia]
180020	Retinal cone dystrophy-1
180069	Retinal dystrophy, autosomal recessive, childhood-onset
180069	Retinitis pigmentosa-20
180069	Leber congenital amaurosis-2, 204100
180071	Retinitis pigmentosa, autosomal recessive
180072	Night blindness, congenital stationary, type 3, 163500
180072	Retinitis pigmentosa, autosomal recessive
180100	Retinitis pigmentosa-1
180104	Retinitis pigmentosa-9
180105	Retinitis pigmentosa-10
180240	Leukemia, acute promyelocytic
180250	Retinol binding protein, deficiency of
180297	Anemia, hemolytic, Rh-null, suppressor type, 268150
180380	Night blindness, congenital stationery, rhodopsin-related
180380	Retinitis pigmentosa, autosomal recessive
180380	Retinitis pigmentosa-4, autosomal dominant
180385	Leukemia, acute T-cell
180721	Retinitis pigmentosa, digenic
180840	Susceptibility to IDDM
180860	Russell-Silver syndrome
180901	Malignant hyperthermia susceptibility 1, 145600
180901	Central core disease, 117000
181405	Scapuloperoneal spinal muscular atrophy, New England type
181430	Scapuloperoneal syndrome, myopathic type
181460	Schistosoma mansoni, susceptibility/resistance to
181510	Schizophrenia
181600	Sclerotylosis
182138	Anxiety-related personality traits
182280	Small-cell cancer of lung
182380	Glucose/galactose malabsorption
182381	Renal glucosuria, 253100
182452	Lung cancer, small cell

182500	Cataract, congenital
182600	Spastic paraplegia-3A
182601	Spastic paraplegia-4
182860	Pyropoikilocytosis
182860	Spherocytosis, recessive
182860	Elliptocytosis-2
182870	Spherocytosis-1
182870	Elliptocytosis-3
182870	Anemia, neonatal hemolytic, fatal and near-fatal
182900	Spherocytosis-2
185470	Myopathy due to succinate dehydrogenase deficiency
185800	Symphalangism, proximal
186580	Arthrocutaneouveal granulomatosis
186740	Immunodeficiency due to defect in CD3-gamma
186770	Leukemia, T-cell acute lymphocytic
186780	CD3, zeta chain, deficiency
186830	Immunodeficiency, T-cell receptor/CD3 complex
186855	Leukemia-2, T-cell acute lymphoblastic
186860	Leukemia/lymphoma, T-cell
186880	Leukemia/lymphoma, T-cell
186921	Leukemia, T-cell acute lymphoblastic
187040	Leukemia-1, T-cell acute lymphoblastic
188025	Thrombocytopenia, Paris-Trousseau type
188070	Bleeding disorder due to defective thromboxane A2 receptor
188540	Hypothyroidism, nongoitrous
188826	Sorsby fundus dystrophy, 136900
189800	Preeclampsia/eclampsia
190000	Atransferrinemia
190020	Bladder cancer, 109800
190040	Dermatofibrosarcoma protuberans
190040	Giant-cell fibroblastoma
190040	Meningioma, SIS-related
190070	Colorectal adenoma
190070	Colorectal cancer
190080	Burkitt lymphoma
190100	Geniospasm
190195	Ichthyosiform erythroderma, congenital, 242100
190195	Ichthyosis, lamellar, autosomal recessive, 242300
190300	Tremor, familial essential, 1
190350	Trichorhinophalangeal syndrome, type I
190450	Hemolytic anemia due to triosephosphate isomerase deficiency
190605	Triphalangeal thumb-polysyndactyly syndrome
190685	Down syndrome
190900	Colorblindness, tritan

191010	Cardiomyopathy, familial hypertrophic, 3, 115196
191030	Nemaline myopathy-1, 161800
191044	Cardiomyopathy, familial hypertrophic
191045	Cardiomyopathy, familial hypertrophic, 2, 115195
191092	Tuberous sclerosis-2
191100	Tuberous sclerosis-1
191181	Cervical carcinoma
191290	Segawa syndrome, recessive
191315	Insensitivity to pain, congenital, with anhidrosis, 256800
192340	Diabetes insipidus, neurohypophyseal, 125700
192500	Jervell and Lange-Nielsen syndrome, 220400
192500	Long QT syndrome-1
192974	Neonatal alloimmune thrombocytopenia
192974	Glycoprotein Ia deficiency
193235	Vitreoretinopathy, neovascular inflammatory
193300	Renal cell carcinoma
193300	von Hippel-Lindau syndrome
194070	Wilms tumor, type 1
194070	Denys-Drash syndrome
194070	Frasier syndrome, 136680
194071	Wilms tumor, type 2
194071	Adrenocortical carcinoma, hereditary, 202300
194190	Wolf-Hirschhorn syndrome
200150	Choreoacanthocytosis
200350	Acetyl-CoA carboxylase deficiency
200990	Acrocallosal syndrome
201450	Acyl-CoA dehydrogenase, medium chain, deficiency of
201460	Acyl-CoA dehydrogenase, long chain, deficiency of
201470	Acyl-CoA dehydrogenase, short-chain, deficiency of
201810	3-beta-hydroxysteroid dehydrogenase, type II, deficiency
201910	Adrenal hyperplasia, congenital, due to 21-hydroxylase deficiency
202010	Adrenal hyperplasia, congenital, due to 11-beta-hydroxylase deficiency
202010	Aldosteronism, glucocorticoid-remediable
202200	Glucocorticoid deficiency, due to ACTH unresponsiveness
203100	Waardenburg syndrome/ocular albinism, digenic, 103470
203100	Albinism, oculocutaneous, type IA
203310	Ocular albinism, autosomal recessive
203500	Alkaptonuria
203750	3-ketothiolase deficiency
203800	Alstrom syndrome
204500	Ceroid-lipofuscinosis, neuronal 2, classic late infantile
205100	Amyotrophic lateral sclerosis, juvenile
205900	Anemia, Diamond-Blackfan

207750	Hyperlipoproteinemia, type Ib
207800	Argininemia
208250	Jacobs syndrome
209900	Bardet-Biedl syndrome 2
209901	Bardet-Biedl syndrome 1
211420	Breast cancer, ductal
213700	Cerebrotendinous xanthomatosis
214400	Charcot-Marie-Tooth neuropathy-4A
215700	Citrullinemia
216900	Achromatopsia
216950	C1r/C1s deficiency, combined
217000	C2 deficiency
217030	C3b inactivator deficiency
217300	Cornea plana congenita, recessive
218000	Andermann syndrome
221770	Polycystic lipomembranous osteodysplasia with sclerosing leukencephalopathy
221820	Gliosis, familial progressive subcortical
222100	Diabetes mellitus, insulin-dependent-1
222700	Lysinuric protein intolerance
222800	Hemolytic anemia due to bisphosphoglycerate mutase deficiency
222900	Sucrose intolerance
223000	Lactase deficiency, adult, 223100
223000	Lactase deficiency, congenital
223360	Dopamine-beta-hydroxylase deficiency
223900	Dysautonomia, familial
227220	[Eye color, brown]
227400	Thromboembolism susceptibility due to factor V Leiden
227400	Hemorrhagic diathesis due to factor V deficiency
227646	Fanconi anemia, type D
228960	[Kininogen deficiency]
229000	Fletcher factor deficiency
229300	Friedreich ataxia
229300	Friedreich ataxia with retained reflexes
229600	Fructose intolerance
230000	Fucosidosis
230200	Galactokinase deficiency with cataracts
230350	Galactose epimerase deficiency
230400	Galactosemia
230450	Hemolytic anemia due to gamma-glutamylcysteine synthetase deficiency
230800	Gaucher disease
230800	Gaucher disease with cardiovascular calcification
231550	Achalasia-addisonianism-alacrimia syndrome

231670	Glutaricaciduria, type I
231680	Glutaricaciduria, type IIA
231950	Glutathioninuria
232050	Propionicacidemia, type II or pccB type
232200	Glycogen storage disease I
232600	McArdle disease
232700	Glycogen storage disease VI
233100	[Renal glucosuria]
233700	Chronic granulomatous disease due to deficiency of NCF-1
233710	Chronic granulomatous disease due to deficiency of NCF-2
234200	Neurodegeneration with brain iron accumulation
235200	Hemochromatosis
235800	[Histidinemia]
236100	Holoprosencephaly-1
236200	Homocystinuria, B6-responsive and nonresponsive types
236700	McKusick-Kaufman syndrome
236730	Urofacial syndrome
238600	Chylomicronemia syndrome, familial
238600	Combined hyperlipemia, familial
238600	Hyperlipoproteinemia I
238600	Lipoprotein lipase deficiency
239100	Van Buchem disease
240300	Autoimmune polyglandular disease, type I
243500	Isovalericacidemia
245200	Krabbe disease
245349	Lacticacidemia due to PDX1 deficiency
246450	HMG-CoA lyase deficiency
246900	Lipoamide dehydrogenase deficiency
247200	Miller-Dieker lissencephaly syndrome
248510	Mannosidosis, beta-
248600	Maple syrup urine disease, type Ia
248610	Maple syrup urine disease, type II
248611	Maple syrup urine disease, type Ib
249000	Meckel syndrome
250100	Metachromatic leukodystrophy
250250	Cartilage-hair hypoplasia
250800	Methemoglobinemia, type I
250800	Methemoglobinemia, type II
250850	Hypermethioninemia, persistent, autosomal dominant, due to methionine adenosyltransferase I/III deficiency
251000	Methylmalonicaciduria, mutase deficiency type
251170	Mevalonicaciduria
251600	Microphthalmia, autosomal recessive
252500	Mucolipidosis II

252500	Mucolipidosis III
252800	Mucopolysaccharidosis Ih
252800	Mucopolysaccharidosis Ih/s
252800	Mucopolysaccharidosis Is
252920	Sanfilippo syndrome, type B
252940	Sanfilippo syndrome, type D
253200	Maroteaux-Lamy syndrome, several forms
253250	Mulibrey nanism
253260	Biotinidase deficiency
253270	Multiple carboxylase deficiency, biotin-responsive
253800	Walker-Warburg syndrome, 236670
253800	Fukuyama type congenital muscular dystrophy
254210	Myasthenia gravis, familial infantile
255800	Schwartz-Jampel syndrome
256030	Nemaline myopathy-2
256540	Galactosialidosis
256550	Sialidosis, type I
256550	Sialidosis, type II
258501	3-methylglutaconicaciduria, type III
258900	Oroticaciduria
259700	Osteopetrosis, recessive
259770	Osteoporosis-pseudoglioma syndrome
259900	Hyperoxaluria, primary, type 1
261510	Pseudo-Zellweger syndrome
261515	Peroxisomal bifunctional enzyme deficiency
261600	Phenylketonuria
261600	[Hyperphenylalaninemia, mild]
261640	Phenylketonuria due to PTS deficiency
262000	Bjornstad syndrome
263200	Polycystic kidney disease, autosomal recessive
263700	Porphyria, congenital erythropoietic
264300	Pseudohermaphroditism, male, with gynecomastia
264470	Adrenoleukodystrophy, pseudoneonatal
264700	Pseudo-vitamin D dependency rickets 1
264900	Factor XI deficiency
266100	Pyridoxine dependency with seizures
266150	Pyruvate carboxylase deficiency
266200	Anemia, hemolytic, due to PK deficiency
266300	[Hair color, red]
267750	Knobloch syndrome
268800	Sandhoff disease, infantile, juvenile, and adult forms
268800	Spinal muscular atrophy, HEXB-related
268900	[Sarcosinemia]
269920	Salla disease

270100	Situs inversus viscerum
271245	Spinocerebellar ataxia-8, infantile, with sensory neuropathy
271900	Canavan disease
272800	Tay-Sachs disease
272800	[Hex A pseudodeficiency]
272800	GM2-gangliosidosis, juvenile, adult
273300	Male germ cell tumor
274600	Pendred syndrome
274600	Deafness, autosomal recessive 4
276000	Pancreatitis, hereditary, 167800
276000	Trypsinogen deficiency
276700	Tyrosinemia, type I
276710	Tyrosinemia, type III
276900	Usher syndrome, type 1A
276901	Usher syndrome, type 2
276902	Usher syndrome, type 3
276903	Usher syndrome, type 1B
276903	Deafness, autosomal dominant 11, neurosensory, 601317
276903	Deafness, autosomal recessive 2, neurosensory, 600060
277700	Werner syndrome
277730	Wernicke-Korsakoff syndrome, susceptibility to
277900	Wilson disease
278000	Wolman disease
278000	Cholesteryl ester storage disease
278300	Xanthinuria, type I
278700	Xeroderma pigmentosum, group A
278720	Xeroderma pigmentosum, group C
300008	Nephrolithiasis, type I, 310468
300008	Proteinuria, low molecular weight, with hypercalciuric nephrocalcinosis
300008	Dent disease, 300009
300008	Hypophosphatemia, type III
300031	Mental retardation, X-linked, FRAXF type
300044	Wernicke-Korsakoff syndrome, susceptibility to
300047	Mental retardation, X-linked 20
300048	Intestinal pseudoobstruction, neuronal, X-linked
300049	Nodular heterotopia, bilateral periventricular
300049	BPNH/MR syndrome
300055	Mental retardation with psychosis, pyramidal signs, and macroorchidism
300071	Night blindness, congenital stationary, type 2
300100	Adrenoleukodystrophy
300100	Adrenomyeloneuropathy
300104	Mental retardation, X-linked nonspecific, 309541

300110	Night blindness, congenital stationary, X-linked incomplete, 300071
300126	Dyskeratosis congenita-1, 305000
300600	Ocular albinism, Forsius-Eriksson type
301000	Thrombocytopenia, X-linked, 313900
301000	Wiskott-Aldrich syndrome
301201	Amelogenesis imperfecta-3, hypoplastic type
301590	Anophthalmos-1
301830	Arthrogryposis, X-linked (spinal muscular atrophy, infantile, X-linked)
301835	Arts syndrome
302060	Noncompaction of left ventricular myocardium, isolated
302060	Barth syndrome
302060	Cardiomyopathy, X-linked dilated, 300069
302060	Endocardial fibroelastosis-2
302960	Chondrodysplasia punctata, X-linked dominant
303700	Colorblindness, blue monochromatic
303800	Colorblindness, deutan
303900	Colorblindness, protan
304040	Charcot-Marie-Tooth neuropathy, X-linked-1, dominant, 302800
304800	Diabetes insipidus, nephrogenic
305100	Anhidrotic ectodermal dysplasia
305450	FG syndrome
305900	Favism
305900	G6PD deficiency
305900	Hemolytic anemia due to G6PD deficiency
306700	Hemophilia A
306995	[Homosexuality, male]
308310	Incontinentia pigmenti, familial
308840	Spastic paraplegia, 312900
308840	Hydrocephalus due to aqueductal stenosis, 307000
308840	MASA syndrome, 303350
309200	Manic-depressive illness, X-linked
309470	Mental retardation, X-linked, syndromic-3, with spastic diplegia
309500	Renpenning syndrome-1
309548	Mental retardation, X-linked, FRAXE type
309605	Mental retardation, X-linked, syndromic-4, with congenital contractures and low fingertip arches
309610	Mental retardation, X-linked, syndromic-2, with dysmorphism and cerebral atrophy
309620	Mental retardation-skeletal dysplasia
309850	Brunner syndrome
309900	Mucopolysaccharidosis II
310300	Emery-Dreifuss muscular dystrophy

310400	Myotubular myopathy, X-linked
310460	Myopia-1
310460	Bornholm eye disease
311050	Optic atrophy, X-linked
311300	Otopalatodigital syndrome, type I
311510	Waisman parkinsonism-mental retardation syndrome
311850	Phosphoribosyl pyrophosphate synthetase-related gout
312060	Properdin deficiency, X-linked
312760	Turner syndrome
313700	Perineal hypospadias
313700	Prostate cancer
313700	Spinal and bulbar muscular atrophy of Kennedy, 313200
313700	Breast cancer, male, with Reifenstein syndrome
313700	Androgen insensitivity, several forms
314250	Dystonia-3, torsion, with parkinsonism, Filipino type
314300	Goeminne TKCR syndrome
314400	Cardiac valvular dysplasia-1
314580	Wieacker-Wolff syndrome
600040	Colorectal cancer
600044	Thrombocythemia, essential, 187950
600045	Xeroderma pigmentosum, group E, subtype 2
600048	Breast cancer-3
600059	Retinitis pigmentosa-13
600065	Leukocyte adhesion deficiency, 116920
600079	Colon cancer
600095	Split hand/foot malformation, type 3
600101	Deafness, autosomal dominant 2
600105	Retinitis pigmentosa-12, autosomal recessive
600119	Muscular dystrophy, Duchenne-like, type 2
600119	Adhalinopathy, primary
600138	Retinitis pigmentosa-11
600140	Rubenstein-Taybi syndrome, 180849
600143	Epilepsy, progressive, with mental retardation
600163	Long QT syndrome-3
600173	SCID, autosomal recessive, T-negative/B-positive type
600175	Spinal muscular atrophy, congenital nonprogressive, of lower limbs
600179	Leber congenital amaurosis, type I, 204000
600185	Pancreatic cancer
600185	Breast cancer 2, early onset
600194	Ichthyosis bullosa of Siemens, 146800
600202	Dyslexia, specific, 2
600211	Cleidocranial dysplasia, 119600
600228	Pseudohypoaldosteronism, type I, 264350

600231	Palmoplantar keratoderma, Bothnia type
600234	HMG-CoA synthease-2 deficiency
600243	Temperature-sensitive apoptosis
600258	Colorectal cancer, hereditary nonpolyposis, type 3
600259	Turcot syndrome with glioblastoma, 276300
600259	Colorectal cancer, hereditary nonpolyposis, type 4
600261	Ehlers-Danlos-like syndrome
600273	Polycystic kidney disease, infantile severe, with tuberous sclerosis
600276	Cerebral arteriopathy with subcortical infarcts and leukoencephalopathy, 125310
600281	Non-insulin-dependent diabetes mellitus, 125853
600281	MODY, type 1, 125850
600309	Atrioventricular canal defect-1
600310	Pseudoachondroplasia, 177170
600310	Epiphyseal dysplasia, multiple 1, 132400
600319	Diabetes mellitus, insulin-dependent, 4
600320	Insulin-dependent diabetes mellitus-5
600321	Diabetes mellitus, insulin-dependent, 7
600332	Rippling muscle disease-1
600354	Spinal muscular atrophy-1, 253300
600354	Spinal muscular atrophy-2, 253550
600354	Spinal muscular atrophy-3, 253400
600374	Bardet-Biedl syndrome 4
600414	Adrenoleukodystrophy, neonatal, 202370
600415	Ataxia with isolated vitamin E deficiency, 277460
600429	[Ii blood group, 110800]
600430	Brachydactyly-mental retardation syndrome
600467	Malignant hyperthermia susceptibility 4
600510	Pigment dispersion syndrome
600511	Schizophrenia-3
600512	Epilepsy, partial
600525	Trichodontoosseous syndrome, 190320
600528	CPT deficiency, hepatic, type I, 255120
600536	Myopathy, congenital
600542	Chondrosarcoma, extraskeletal myxoid
600617	Lipoid adrenal hyperplasia, 201710
600618	Leukemia, acute lymphoblastic
600623	Prostate cancer, 176807
600631	Enuresis, nocturnal, 1
600650	Myopathy due to CPT II deficiency, 255110
600650	CPT deficiency, hepatic, type II, 600649
600652	Deafness, autosomal dominant 4
600669	Epilepsy, generalized, idiopathic
600678	Cancer susceptibility

600700	Lipoma
600701	Lipoma
600722	Ceroid lipofuscinosis, neuronal, variant juvenile type, with granular osmiophilic deposits
600722	Ceroid lipofuscinosis, neuronal-1, infantile, 256730
600725	Holoprosencephaly-3, 142945
600757	Orofacial cleft-3
600759	Alzheimer disease-4
600792	Deafness, autosomal recessive 5
600807	Bronchial asthma
600808	Enuresis, nocturnal, 2
600811	Xeroderma pigmentosum, group E, DDB-negative subtype, 278740
600839	Bartter syndrome, 241200
600850	Schizophrenia disorder-4
600856	Beckwith-Wiedemann syndrome, 130650
600881	Cataract, congenital, zonular, with sutural opacities
600882	Charcot-Marie-Tooth neuropathy-2B
600883	Diabetes mellitus, insulin-dependent, 8
600884	Cardiomyopathy, familial dilated 1B
600887	Endometrial carcinoma
600897	Cataract, zonular pulverulent-1, 116200
600899	Severe combined immunodeficiency, type I, 202500
600918	Cystinuria, type III
600919	Long QT syndrome-4 with sinus bradycardia
600923	Porphyria variegata, 176200
600956	Persistent Mullerian duct syndrome, type II, 261550
600957	Persistent Mullerian duct syndrome, type I, 261550
600958	Cardiomyopathy, familial hypertrophic, 4, 115197
600964	Refsum disease, adult, with increased pipecolicacidemia
600965	Deafness, autosomal dominant 6
600968	Gitelman syndrome, 263800
600971	Deafness, autosomal recessive 6
600974	Deafness, autosomal recessive 7
600975	Glaucoma 3, primary infantile, B
600977	Cone dystrophy, progressive
600994	Deafness, autosomal dominant 5
600995	Nephrotic syndrome, idiopathic, steroid-resistant
600996	Arrhythmogenic right ventricular dysplasia-2
600998	Bleeding diathesis due to GNAQ deficiency
601011	Spinocerebellar ataxia-6, 183086
601011	Cerebellar ataxia, pure
601011	Episodic ataxia, type 2, 108500
601011	Hemiplegic migraine, familial, 141500

601071	Deafness, autosomal recessive 9
601072	Deafness, autosomal recessive 8
601105	Pycnodysostosis, 265800
601107	Dubin-Johnson syndrome, 237500
601130	Tolbutamide poor metabolizer
601145	Epilepsy, progressive myoclonic 1, 254800
601154	Cardiomyopathy, dilated, 1E
601199	Neonatal hyperparathyroidism, 239200
601199	Hypocalcemia, autosomal dominant, 601198
601199	Hypocalciuric hypercalcemia, type I, 145980
601202	Cataract, anterior polar-2
601208	Insulin-dependent diabetes mellitus-11
601226	Progressive external ophthalmoplegia, type 2
601238	Cerebellar ataxia, Cayman type
601253	Muscular dystrophy, limb-girdle, type IC
601267	HIV infection, susceptibility/resistence to
601277	Ichthyosis, lamellar, type 2
601282	Muscular dystrophy with epidermolysis bullosa simplex, 226670
601284	Hereditary hemorrhagic telangiectasia-2, 600376
601313	Polycystic kidney disease, adult type I, 173900
601316	Deafness, autosomal dominant 10
601318	Diabetes mellitus, insulin-dependent, 13
601363	Wilms tumor, type 4
601369	Deafness, autosomal dominant 9
601373	HIV infection, susceptibility/resistance to
601382	Charcot-Marie-Tooth neuropathy-4B
601385	Prostate cancer
601386	Deafness, autosomal recessive 12
601399	Platelet disorder, familial, with associated myeloid malignancy
601406	B-cell non-Hodgkin lymphoma, high-grade
601410	Diabetes mellitus, transient neonatal
601412	Deafness, autosomal dominant 7
601414	Retinitis pigmentosa-18
601455	Hereditary motor and sensory neuropathy, Lom type
601471	Moebius syndrome-2
601493	Cardiomyopathy, dilated 1C
601494	Cardiomyopathy, familial, dilated-2
601499	Rieger syndrome, type 2
601517	Spinocerebellar ataxia-2, 183090
601518	Prostate cancer, hereditary, 1, 176807
601542	Rieger syndrome, type 1, 180500
601545	Lissencephaly-1
601556	Spinocerebellar ataxia-1, 164400
601596	Charcot-Marie-Tooth neuropathy, demyelinating

601604	Mycobacterial and salmonella infections, susceptibility to
601620	Holt-Oram syndrome, 142900
601621	Ulnar-mammary syndrome, 181450
601622	Saethre-Chotzen syndrome, 101400
601623	Angelman syndrome
601649	Blepharophimosis, epicanthus inversus, and ptosis, type 2
601650	Paraganglioma, familial nonchromaffin, 2
601652	Glaucoma 1A, primary open angle, juvenile-onset, 137750
601653	Branchiootic syndrome
601653	Branchiootorenal syndrome, 113650
601666	Insulin-dependent diabetes mellitus-15
601669	Hirschsprung disease, one form
601676	Acute insulin response
601680	Distal arthrogryposis, type 2B
601682	Glaucoma 1C, primary open angle
601687	Meesmann corneal dystrophy, 122100
601690	Platelet-activating factor acetylhydrolase deficiency
601691	Retinitis pigmentosa-19, 601718
601691	Stargardt disease-1, 248200
601691	Cone-rod dystrophy 3
601691	Fundus flavimaculatus with macular dystrophy, 248200
601692	Reis-Bucklers corneal dystrophy
601692	Corneal dystrophy, Avellino type
601692	Corneal dystrophy, Groenouw type I, 121900
601692	Corneal dystrophy, lattice type I, 122200
601718	Retinitis pigmentosa-19
601744	Systemic lupus erythematosus, susceptibility to, 1
601757	Rhizomelic chondrodysplasia punctata, type 1, 215100
601768	Leukemia, acute myeloid
601769	Osteoporosis, involutional
601769	Rickets, vitamin D-resistant, 277440
601771	Glaucoma 3A, primary infantile, 231300
601777	Cone dystrophy, progressive
601780	Ceroid-lipofuscinosis, neuronal-6, variant late infantile
601785	Carbohydrate-deficient glycoprotein syndrome, type I, 212065
601800	[Hair color, brown]
601843	Hypothyroidism, congenital, 274400
601844	Pseudohypoaldosteronism type II
601846	Muscular dystrophy with rimmed vacuoles
601850	Retinitis pigmentosa-deafness syndrome
601863	Bare lymphocyte syndrome, complementation group C
601868	Deafness, autosomal dominant 13
601884	[High bone mass]
601889	Lymphoma, diffuse large cell

601920	Alagille syndrome, 118450
601928	Monilethrix, 158000
601954	Muscular dystrophy, limb-girdle, type 2G
601969	Glioblastoma multiforme, 137800
601969	Medulloblastoma, 155255
601975	Ectodermal dysplasia/skin fragility syndrome
601990	Neuroblastoma
602011	Pancreatic endocrine tumors
602014	Hypomagnesemia with secondary hypocalcemia
602023	Bartter syndrome, type 3
602025	Obesity/hyperinsulinism, susceptibility to
602026	Refsum disease, 266500
602067	Cardiomyopathy, dilated, 1F
602081	Speech-language disorder-1
602082	Corneal dystrophy, Thiel-Behnke type
602086	Arrhythmogenic right ventricular dysplasia-3
602087	Arrhythmogenic right ventricular dysplasia-4
602088	Nephronophthisis, infantile
602089	Hemangioma, capillary, hereditary
602091	Marfan syndrome, atypical
602092	Deafness, autosomal recessive 18
602094	Lipodystrophy, familial partial
602096	Alzheimer disease-5
602116	Glioma
602117	Prader-Willi syndrome
602121	Deafness, autosomal dominant nonsyndromic sensorineural, 1, 124900
602134	Tremor, familial essential, 2
602136	Refsum disease, infantile, 266510
602136	Zellweger syndrome-1, 214100
602136	Adrenoleukodystrophy, neonatal, 202370
602153	Monilethrix, 158000
602216	Peutz-Jeghers syndrome, 175200
602225	Cone-rod retinal dystrophy-2, 120970
602225	Leber congenital amaurosis, type III
602232	Epilepsy, benign neonatal, type 2, 121201
602235	Epilepsy, benign, neonatal, type 1, 121200
602279	Oculopharyngeal muscular dystorphy, 164300
602279	Oculopharyngeal muscular dystrophy, autosomal recessive, 257950
602280	Retinitis pigmentosa-14, 600132
602403	Alzheimer disease, susceptibility to
602404	Parkinson disease, type 3
602421	Sweat chloride elevation without CF

602421	Congenital bilateral absence of vas deferens, 277180
602421	Cystic fibrosis, 219700
602447	Coronary artery disease, susceptibility to
602460	Deafness, autosomal dominant 15, 602459
602475	Ossification of posterior longitudinal ligament of spine
602476	Febrile convulsions, familial, 1
602477	Febrile convulsions, familial, 2
602491	Hyperlipidemia, familial combined, 1
602522	Bartter syndrome, infantile, with sensorineural deafness
602544	Parkinson disease, juvenile, type 2, 600116
602574	Deafness, autosomal dominant 12, 601842
602574	Deafness, autosomal dominant 8, 601543
602616	Carbohydrate-deficient glycoprotein syndrome, type II, 212066
602629	Dystonia-6, torsion
602631	Rhabdomyosarcoma, 268210
602631	Breast Cancer
602667	Nijmegen breakage syndrome, 251260
602716	Nephrosis-1, congenital, Finnish type, 256300
602771	Muscular dystrophy, congenital, with early spine rigidity
602772	Retinitis pitmentosa-24
602782	Faisalabad histiocytosis

Polynucleotide and Polypeptide Variants

[0071] The present invention is also directed to variants of the ovarian associated polynucleotide sequence disclosed in SEQ ID NO:X or the complementary strand thereto, nucleotide sequences encoding the polypeptide of SEQ ID NO:Y, the nucleotide sequence of SEQ ID NO:X encoding the polypeptide sequence as defined in column 6 of Table 1, nucleotide sequences encoding the polypeptide as defined in column 6 of Table 1, the nucleotide sequence as defined in columns 8 and 9 of Table 2, nucleotide sequences encoding the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2, the cDNA sequence contained in Clone ID NO:Z, and/or nucleotide sequences encoding a polypeptide encoded by the cDNA sequence contained in Clone ID NO:Z.

[0072] The present invention also encompasses variants of the polypeptide sequence disclosed in SEQ ID NO:Y, a polypeptide sequence as defined in column 6 of

Table 1, a polypeptide sequence encoded by the polynucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2, a polypeptide sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, and/or a polypeptide sequence encoded by the cDNA sequence contained in Clone ID NO:Z.

[0073] "Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

[0074] Thus, one aspect of the invention provides an isolated nucleic acid molecule comprising, or alternatively consisting of, a polynucleotide having a nucleotide sequence selected from the group consisting of: (a) a nucleotide sequence described in SEQ ID NO:X or contained in the cDNA sequence of Clone ID NO:Z; (b) a nucleotide sequence in SEQ ID NO:X or the cDNA in Clone ID NO:Z which encodes a mature ovarian associated polypeptide; (c) a nucleotide sequence in SEQ ID NO:X or the cDNA sequence of Clone ID NO:Z, which encodes a biologically active fragment of an ovarian associated polypeptide; (d) a nucleotide sequence in SEQ ID NO:X or the cDNA sequence of Clone ID NO:Z, which encodes an antigenic fragment of an ovarian associated polypeptide; (e) a nucleotide sequence encoding an ovarian associated polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z; (f) a nucleotide sequence encoding a mature ovarian associated polypeptide of the amino acid sequence of SEQ ID NO:Y or the amino acid sequence encoded by the cDNA in Clone ID NO:Z; (g) a nucleotide sequence encoding a biologically active fragment of an ovarian associated polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z; (h) a nucleotide sequence encoding an antigenic fragment of an ovarian associated polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z; and (i) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), or (h), above.

[0075] The present invention is also directed to nucleic acid molecules which comprise, or alternatively consist of, a nucleotide sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100%, identical to, for example, any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), (h), or (i) above, the nucleotide coding sequence in SEQ ID NO:X or the complementary strand thereto, the nucleotide coding sequence of the cDNA contained in Clone ID NO:Z or the complementary strand thereto, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, a nucleotide sequence encoding the polypeptide encoded by the cDNA contained in Clone ID NO:Z, the nucleotide coding sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto, a nucleotide sequence encoding the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto, the nucleotide sequence in SEQ ID NO:X encoding the polypeptide sequence as defined in column 6 of Table 1 or the complementary strand thereto, nucleotide sequences encoding a polypeptide as defined in column 6 of Table 1 or the complementary strand thereto, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polynucleotides which hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides and nucleic acids.

[0076] In a preferred embodiment, the invention encompasses nucleic acid molecules which comprise, or alternatively, consist of a polynucleotide which hybridizes under stringent hybridization conditions, or alternatively, under lower stringency conditions, to a polynucleotide in (a), (b), (c), (d), (e), (f), (g), (h), or (i) above, as are polypeptides encoded by these polynucleotides. In another preferred embodiment, polynucleotides which hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

[0077] In another embodiment, the invention provides a purified protein comprising, or alternatively consisting of, a polypeptide having an amino acid sequence selected from the group consisting of: (a) the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z; (b) the amino acid sequence of a mature ovarian associated polypeptide having the amino acid sequence of SEQ ID NO:Y or the amino acid sequence encoded by the cDNA in Clone ID NO:Z; (c) the amino acid sequence of a biologically active fragment of an ovarian associated polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z; and (d) the amino acid sequence of an antigenic fragment of an ovarian associated polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in Clone ID NO:Z.

[0078] The present invention is also directed to proteins which comprise, or alternatively consist of, an amino acid sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100%, identical to, for example, any of the amino acid sequences in (a), (b), (c), or (d), above, the amino acid sequence shown in SEQ ID NO:Y, the amino acid sequence encoded by the cDNA contained in Clone ID NO:Z, the amino acid sequence of the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2, the amino acid sequence as defined in column 6 of Table 1, an amino acid sequence encoded by the nucleotide sequence in SEQ ID NO:X, and an amino acid sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X. Fragments of these polypeptides are also provided (e.g., those fragments described herein). Further proteins encoded by polynucleotides which hybridize to the complement of the nucleic acid molecules encoding these amino acid sequences under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are the polynucleotides encoding these proteins.

[0079] By a nucleic acid having a nucleotide sequence at least, for example, 95% "identical" to a reference nucleotide sequence of the present invention, it is intended that the nucleotide sequence of the nucleic acid is identical to the reference sequence except that the nucleotide sequence may include up to five point mutations per each 100

nucleotides of the reference nucleotide sequence encoding the polypeptide. In other words, to obtain a nucleic acid having a nucleotide sequence at least 95% identical to a reference nucleotide sequence, up to 5% of the nucleotides in the reference sequence may be deleted or substituted with another nucleotide, or a number of nucleotides up to 5% of the total nucleotides in the reference sequence may be inserted into the reference sequence. The query sequence may be an entire sequence referred to in Table 1 or 2 as the ORF (open reading frame), or any fragment specified, as described herein.

[0080] As a practical matter, whether any particular nucleic acid molecule or polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a nucleotide sequence of the present invention can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. 6:237-245 (1990)). In a sequence alignment the query and subject sequences are both DNA sequences. An RNA sequence can be compared by converting U's to T's. The result of said global sequence alignment is expressed as percent identity. Preferred parameters used in a FASTDB alignment of DNA sequences to calculate percent identity are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30, Randomization Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size Penalty 0.05, Window Size=500 or the length of the subject nucleotide sequence, whichever is shorter.

[0081] If the subject sequence is shorter than the query sequence because of 5' or 3' deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for 5' and 3' truncations of the subject sequence when calculating percent identity. For subject sequences truncated at the 5' or 3' ends, relative to the query sequence, the percent identity is corrected by calculating the number of bases of the query sequence that are 5' and 3' of the subject sequence, which are not matched/aligned, as a percent of the total bases of the query sequence. Whether a nucleotide is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to

arrive at a final percent identity score. This corrected score is what is used for the purposes of the present invention. Only bases outside the 5' and 3' bases of the subject sequence, as displayed by the FASTDB alignment, which are not matched/aligned with the query sequence, are calculated for the purposes of manually adjusting the percent identity score.

[0082] For example, a 90 base subject sequence is aligned to a 100 base query sequence to determine percent identity. The deletions occur at the 5' end of the subject sequence and therefore, the FASTDB alignment does not show a matched/alignment of the first 10 bases at 5' end. The 10 unpaired bases represent 10% of the sequence (number of bases at the 5' and 3' ends not matched/total number of bases in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 bases were perfectly matched the final percent identity would be 90%. In another example, a 90 base subject sequence is compared with a 100 base query sequence. This time the deletions are internal deletions so that there are no bases on the 5' or 3' of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only bases 5' and 3' of the subject sequence which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to made for the purposes of the present invention.

[0083] By a polypeptide having an amino acid sequence at least, for example, 95% "identical" to a query amino acid sequence of the present invention, it is intended that the amino acid sequence of the subject polypeptide is identical to the query sequence except that the subject polypeptide sequence may include up to five amino acid alterations per each 100 amino acids of the query amino acid sequence. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a query amino acid sequence, up to 5% of the amino acid residues in the subject sequence may be inserted, deleted, (indels) or substituted with another amino acid. These alterations of the reference sequence may occur at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions, interspersed either individually among residues in the reference sequence or in one or more contiguous groups within the reference sequence.

[0084] As a practical matter, whether any particular polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to, for instance, the amino acid sequence of a polypeptide referred to in Table 1 (e.g., an amino acid sequence identified in columns 5 or 6) or Table 2 (e.g., the amino acid sequence of the polypeptide encoded by the polynucleotide sequence defined in columns 8 and 9 of Table 2) or a fragment thereof, the amino acid sequence of the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X or a fragment thereof, or an amino acid sequence of the polypeptide encoded by cDNA contained in Clone ID NO:Z, or a fragment thereof, can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci.6:237-245 (1990)). In a sequence alignment the query and subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is expressed as percent identity. Preferred parameters used in a FASTDB amino acid alignment are: Matrix=PAM 0, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Window Size=sequence length, Gap Penalty=5, Gap Size Penalty=0.05, Window Size=500 or the length of the subject amino acid sequence, whichever is shorter.

[0085] If the subject sequence is shorter than the query sequence due to N- or C-terminal deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for N- and C-terminal truncations of the subject sequence when calculating global percent identity. For subject sequences truncated at the N- and C-termini, relative to the query sequence, the percent identity is corrected by calculating the number of residues of the query sequence that are N- and C-terminal of the subject sequence, which are not matched/aligned with a corresponding subject residue, as a percent of the total bases of the query sequence. Whether a residue is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This final percent identity score is what is used for the purposes of the

present invention. Only residues to the N- and C-termini of the subject sequence, which are not matched/aligned with the query sequence, are considered for the purposes of manually adjusting the percent identity score. That is, only query residue positions outside the farthest N- and C- terminal residues of the subject sequence.

[0086] For example, a 90 amino acid residue subject sequence is aligned with a 100 residue query sequence to determine percent identity. The deletion occurs at the N-terminus of the subject sequence and therefore, the FASTDB alignment does not show a matching/alignment of the first 10 residues at the N-terminus. The 10 unpaired residues represent 10% of the sequence (number of residues at the N- and C- termini not matched/total number of residues in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 residues were perfectly matched the final percent identity would be 90%. In another example, a 90 residue subject sequence is compared with a 100 residue query sequence. This time the deletions are internal deletions so there are no residues at the N- or C-termini of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only residue positions outside the N- and C-terminal ends of the subject sequence, as displayed in the FASTDB alignment, which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to be made for the purposes of the present invention.

[0087] The polynucleotide variants of the invention may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce silent substitutions, additions, or deletions, but do not alter the properties or activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, polypeptide variants in which less than 50, less than 40, less than 30, less than 20, less than 10, or 5-50, 5-25, 5-10, 1-5, or 1-2 amino acids are substituted, deleted, or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in the human mRNA to those preferred by a bacterial host such as *E. coli*).

[0088] Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985).) These allelic variants can vary at either the polynucleotide and/or polypeptide level and are included in the present invention. Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

[0089] Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, one or more amino acids can be deleted from the N-terminus or C-terminus of the polypeptides of the present invention without substantial loss of biological function. As an example, the authors of Ron et al., J. Biol. Chem. 268: 2984-2988 (1993), reported variant KGF proteins having heparin binding activity even after deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., J. Biotechnology 7:199-216 (1988).)

[0090] Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (J. Biol. Chem. 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

[0091] Furthermore, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form are

removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

[0092] Thus, the invention further includes polypeptide variants which show a functional activity (e.g., biological activity) of the polypeptides of the invention. Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as have little effect on activity.

[0093] The present application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, (e.g., encoding a polypeptide having the amino acid sequence of an N and/or C terminal deletion), irrespective of whether they encode a polypeptide having functional activity. This is because even where a particular nucleic acid molecule does not encode a polypeptide having functional activity, one of skill in the art would still know how to use the nucleic acid molecule, for instance, as a hybridization probe or a polymerase chain reaction (PCR) primer. Uses of the nucleic acid molecules of the present invention that do not encode a polypeptide having functional activity include, *inter alia*, (1) isolating a gene or allelic or splice variants thereof in a cDNA library; (2) in situ hybridization (e.g., "FISH") to metaphase chromosomal spreads to provide precise chromosomal location of the gene, as described in Verma et al., Human Chromosomes: A Manual of Basic Techniques, Pergamon Press, New York (1988); (3) Northern Blot analysis for detecting mRNA expression in specific tissues (e.g., normal ovarian tissues or diseased ovarian tissues); and (4) *in situ* hybridization (e.g., histochemistry) for detecting mRNA expression in specific tissues (e.g., normal ovarian tissues or diseased ovarian tissues).

[0094] Preferred, however, are nucleic acid molecules having sequences at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, which do, in fact, encode a polypeptide having functional activity. By a polypeptide having "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein of the invention. Such functional activities include, but are not limited to, biological activity, antigenicity [ability to bind (or compete with a polypeptide of the

invention for binding) to an anti-polypeptide of the invention antibody], immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide of the invention.

[0095] The functional activity of the polypeptides, and fragments, variants and derivatives of the invention, can be assayed by various methods.

[0096] For example, in one embodiment where one is assaying for the ability to bind or compete with full-length polypeptide of the present invention for binding to an anti-polypeptide of the invention antibody, various immunoassays known in the art can be used, including but not limited to, competitive and non-competitive assay systems using techniques such as radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoradiometric assays, gel diffusion precipitation reactions, immunodiffusion assays, in situ immunoassays (using colloidal gold, enzyme or radioisotope labels, for example), western blots, precipitation reactions, agglutination assays (e.g., gel agglutination assays, hemagglutination assays), complement fixation assays, immunofluorescence assays, protein A assays, and immunoelectrophoresis assays, etc. In one embodiment, antibody binding is detected by detecting a label on the primary antibody. In another embodiment, the primary antibody is detected by detecting binding of a secondary antibody or reagent to the primary antibody. In a further embodiment, the secondary antibody is labeled. Many means are known in the art for detecting binding in an immunoassay and are within the scope of the present invention.

[0097] In another embodiment, where a ligand is identified, or the ability of a polypeptide fragment, variant or derivative of the invention to multimerize is being evaluated, binding can be assayed, e.g., by means well-known in the art, such as, for example, reducing and non-reducing gel chromatography, protein affinity chromatography, and affinity blotting. See generally, Phizicky et al., Microbiol. Rev. 59:94-123 (1995). In another embodiment, the ability of physiological correlates of a polypeptide of the present invention to bind to a substrate(s) of the polypeptide of the invention can be routinely assayed using techniques known in the art.

[0098] In addition, assays described herein (see Examples) and otherwise known in the art may routinely be applied to measure the ability of polypeptides of the present

invention and fragments, variants and derivatives thereof to elicit polypeptide related biological activity (either *in vitro* or *in vivo*). Other methods will be known to the skilled artisan and are within the scope of the invention.

[0100] Of course, due to the degeneracy of the genetic code, one of ordinary skill in the art will immediately recognize that a large number of the nucleic acid molecules having a sequence at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to, for example, the nucleic acid sequence of the cDNA contained in Clone ID NO:Z, a nucleic acid sequence referred to in Table 1 (e.g., SEQ ID NO:X), a nucleic acid sequence disclosed in Table 2 (e.g., the nucleic acid sequence delineated in columns 8 and 9) or fragments thereof, will encode polypeptides "having functional activity." In fact, since degenerate variants of any of these nucleotide sequences all encode the same polypeptide, in many instances, this will be clear to the skilled artisan even without performing the above described comparison assay. It will be further recognized in the art that, for such nucleic acid molecules that are not degenerate variants, a reasonable number will also encode a polypeptide having functional activity. This is because the skilled artisan is fully aware of amino acid substitutions that are either less likely or not likely to significantly effect protein function (e.g., replacing one aliphatic amino acid with a second aliphatic amino acid), as further described below.

[0101] For example, guidance concerning how to make phenotypically silent amino acid substitutions is provided in Bowie et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions," Science 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid sequence to change.

[0102] The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for protein function. In contrast, the amino acid positions where substitutions have been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

[0103] The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. See Cunningham et al., Science 244:1081-1085 (1989). The resulting mutant molecules can then be tested for biological activity.

[0104] As the authors state, these two strategies have revealed that proteins are surprisingly tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly. Besides conservative amino acid substitutions, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitutions with one or more of the amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility of the polypeptide (for example, polyethylene glycol), or (iv) fusion of the polypeptide with additional amino acids, such as, for example, an IgG Fc fusion region peptide, serum albumin (preferably human serum albumin) or a fragment or variant thereof, or leader or secretory sequence, or a sequence facilitating purification. Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

[0105] For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved characteristics, such as less aggregation. Aggregation of pharmaceutical

formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. See Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).

[0106] A further embodiment of the invention relates to polypeptides which comprise the amino acid sequence of a polypeptide having an amino acid sequence which contains at least one amino acid substitution, but not more than 50 amino acid substitutions, even more preferably, not more than 40 amino acid substitutions, still more preferably, not more than 30 amino acid substitutions, and still even more preferably, not more than 20 amino acid substitutions from a polypeptide sequence disclosed herein. Of course it is highly preferable for a polypeptide to have an amino acid sequence which comprises the amino acid sequence of a polypeptide of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, an amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, an amino acid sequence encoded by the complement of SEQ ID NO:X, and/or the amino acid sequence encoded by cDNA contained in Clone ID NO:Z which contains, in order of ever-increasing preference, at least one, but not more than 10, 9, 8, 7, 6, 5, 4, 3, 2 or 1 amino acid substitutions.

[0107] In specific embodiments, the polypeptides of the invention comprise, or alternatively, consist of, fragments or variants of a reference amino acid sequence selected from: (a) the amino acid sequence of SEQ ID NO:Y or fragments thereof (e.g., the mature form and/or other fragments described herein); (b) the amino acid sequence encoded by SEQ ID NO:X or fragments thereof; (c) the amino acid sequence encoded by the complement of SEQ ID NO:X or fragments thereof; (d) the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or fragments thereof; and (e) the amino acid sequence encoded by cDNA contained in Clone ID NO:Z or fragments thereof; wherein the fragments or variants have 1-5, 5-10, 5-25, 5-50, 10-50 or 50-150, amino acid residue additions, substitutions, and/or deletions when compared to the reference amino acid sequence. In preferred embodiments, the amino acid substitutions are conservative. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Polynucleotide and Polypeptide Fragments

[0108] The present invention is also directed to polynucleotide fragments of the polynucleotides (nucleic acids) of the invention. In the present invention, a "polynucleotide fragment" refers to a polynucleotide having a nucleic acid sequence which, for example: is a portion of the cDNA contained in Clone ID NO:Z or the complementary strand thereto; is a portion of the polynucleotide sequence encoding the polypeptide encoded by the cDNA contained in Clone ID NO:Z or the complementary strand thereto; is a portion of a polynucleotide sequence encoding the amino acid sequence encoded by the region of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence in SEQ ID NO:X or the complementary strand thereto; is a polynucleotide sequence encoding a portion of the polypeptide of SEQ ID NO:Y; is a polynucleotide sequence encoding a portion of a polypeptide encoded by SEQ ID NO:X; or is a polynucleotide sequence encoding a portion of a polypeptide encoded by the complement of the polynucleotide sequence in SEQ ID NO:X.

[0109] The polynucleotide fragments of the invention are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt, at least about 50 nt, at least about 75 nt, or at least about 150 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from the cDNA sequence contained in Clone ID NO:Z, or the nucleotide sequence shown in SEQ ID NO:X or the complementary stand thereto. In this context "about" includes the particularly recited value or a value larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. These nucleotide fragments have uses that include, but are not limited to, as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., at least 160, 170, 180, 190, 200, 250, 500, 600, 1000, or 2000 nucleotides in length) are also encompassed by the invention.

[0110] Moreover, representative examples of polynucleotide fragments of the invention, comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500,

501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of SEQ ID NO:X, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity). More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

[0111] Further representative examples of polynucleotide fragments of the invention, comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-

1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of the cDNA sequence contained in Clone ID NO:Z, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity). More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

[0112] In the present invention, a "polypeptide fragment" refers to an amino acid sequence which is a portion of that contained in SEQ ID NO:Y, a portion of an amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, a portion of an amino acid sequence encoded by the polynucleotide sequence of SEQ ID NO:X, a portion of an amino acid sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, and/or a portion of an amino acid sequence

encoded by the cDNA contained in Clone ID NO:Z. Protein (polypeptide) fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region. In a preferred embodiment, polypeptide fragments of the invention include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region of SEQ ID NO:Y. Moreover, polypeptide fragments of the invention may be at least about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges or values, or ranges or values larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either extreme or at both extremes. Polynucleotides encoding these polypeptide fragments are also encompassed by the invention.

[0113] Even if deletion of one or more amino acids from the N-terminus of a protein results in modification of loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example, the ability of shortened muteins to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptides generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the N-terminus. Whether a particular polypeptide lacking N-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted N-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

[0114] Accordingly, polypeptide fragments include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both. For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions is preferred. Similarly, polynucleotides encoding these polypeptide fragments are also preferred.

[0115] The present invention further provides polypeptides having one or more residues deleted from the amino terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X or the complement thereof, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z). In particular, N-terminal deletions may be described by the general formula m-q, where q is a whole integer representing the total number of amino acid residues in a polypeptide of the invention (e.g., the polypeptide disclosed in SEQ ID NO:Y, or the polypeptide encoded by

the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2), and m is defined as any integer ranging from 2 to q-6. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0116] The present invention further provides polypeptides having one or more residues from the carboxy terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or a polypeptide encoded by the cDNA contained in Clone ID NO:Z). In particular, C-terminal deletions may be described by the general formula 1-n, where n is any whole integer ranging from 6 to q-1, and where n corresponds to the position of amino acid residue in a polypeptide of the invention. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0117] In addition, any of the above described N- or C-terminal deletions can be combined to produce a N- and C-terminal deleted polypeptide. The invention also provides polypeptides having one or more amino acids deleted from both the amino and the carboxyl termini, which may be described generally as having residues m-n of a polypeptide encoded by SEQ ID NO:X (e.g., including, but not limited to, the preferred polypeptide disclosed as SEQ ID NO:Y and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2), the cDNA contained in Clone ID NO:Z, and/or the complement thereof, where n and m are integers as described above. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0118] Also as mentioned above, even if deletion of one or more amino acids from the C-terminus of a protein results in modification of loss of one or more biological functions of the protein, other functional activities (e.g., biological activities, ability to multimerize, ability to bind a ligand) may still be retained. For example the ability of the shortened mutein to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptide generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the C-terminus. Whether a particular polypeptide lacking C-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a

large number of deleted C-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

[0119] The present application is also directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence set forth herein. In preferred embodiments, the application is directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to polypeptides having the amino acid sequence of the specific N- and C-terminal deletions. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0120] Any polypeptide sequence encoded by, for example, the polynucleotide sequences set forth as SEQ ID NO:X or the complement thereof, (presented, for example, in Tables 1A and 2), or the cDNA contained in Clone ID NO:Z, may be analyzed to determine certain preferred regions of the polypeptide. For example, the amino acid sequence of a polypeptide encoded by a polynucleotide sequence of SEQ ID NO:X (e.g., the polypeptide of SEQ ID NO:Y and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2) or the cDNA contained in Clone ID NO:Z may be analyzed using the default parameters of the DNASTAR computer algorithm (DNASTAR, Inc., 1228 S. Park St., Madison, WI 53715 USA; http://www.dnastar.com/).

[0121] Polypeptide regions that may be routinely obtained using the DNASTAR computer algorithm include, but are not limited to, Garnier-Robson alpha-regions, beta-regions, turn-regions, and coil-regions; Chou-Fasman alpha-regions, beta-regions, and turn-regions; Kyte-Doolittle hydrophilic regions and hydrophobic regions; Eisenberg alpha- and beta-amphipathic regions; Karplus-Schulz flexible regions; Emini surface-forming regions; and Jameson-Wolf regions of high antigenic index. Among highly preferred polynucleotides of the invention in this regard are those that encode polypeptides comprising regions that combine several structural features, such as several (e.g., 1, 2, 3 or 4) of the features set out above.

[0122] Additionally, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Emini surface-forming regions, and Jameson-Wolf regions of high antigenic index (i.e.,

containing four or more contiguous amino acids having an antigenic index of greater than or equal to 1.5, as identified using the default parameters of the Jameson-Wolf program) can routinely be used to determine polypeptide regions that exhibit a high degree of potential for antigenicity. Regions of high antigenicity are determined from data by DNASTAR analysis by choosing values which represent regions of the polypeptide which are likely to be exposed on the surface of the polypeptide in an environment in which antigen recognition may occur in the process of initiation of an immune response.

[0123] Preferred polypeptide fragments of the invention are fragments comprising, or alternatively, consisting of, an amino acid sequence that displays a functional activity (e.g. biological activity) of the polypeptide sequence of which the amino acid sequence is a fragment. By a polypeptide displaying a "functional activity" is meant a polypeptide capable of one or more known functional activities associated with a full-length protein, such as, for example, biological activity, antigenicity, immunogenicity, and/or multimerization, as described herein.

[0124] Other preferred polypeptide fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

[0125] In preferred embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the antigenic fragments of the polypeptide of SEQ ID NO:Y, or portions thereof. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0126] The present invention encompasses polypeptides comprising, or alternatively consisting of, an epitope of: the polypeptide sequence shown in SEQ ID NO:Y; a polypeptide sequence encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2; the polypeptide sequence encoded by the cDNA contained in Clone ID NO:Z; or the polypeptide sequence encoded by a polynucleotide that hybridizes to the sequence of SEQ ID NO:X, the complement of the sequence of SEQ ID NO:X, the complement of a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, or

the cDNA sequence contained in Clone ID NO:Z under stringent hybridization conditions or alternatively, under lower stringency hybridization as defined *supra*. The present invention further encompasses polynucleotide sequences encoding an epitope of a polypeptide sequence of the invention (such as, for example, the sequence disclosed in SEQ ID NO:X, or a fragment thereof), polynucleotide sequences of the complementary strand of a polynucleotide sequence encoding an epitope of the invention, and polynucleotide sequences which hybridize to the complementary strand under stringent hybridization conditions or alternatively, under lower stringency hybridization conditions defined *supra*.

[0127] The term "epitopes," as used herein, refers to portions of a polypeptide having antigenic or immunogenic activity in an animal, preferably a mammal, and most preferably in a human. In a preferred embodiment, the present invention encompasses a polypeptide comprising an epitope, as well as the polynucleotide encoding this polypeptide. An "immunogenic epitope," as used herein, is defined as a portion of a protein that elicits an antibody response in an animal, as determined by any method known in the art, for example, by the methods for generating antibodies described *infra*. (See, for example, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998- 4002 (1983)). The term "antigenic epitope," as used herein, is defined as a portion of a protein to which an antibody can immunospecifically bind its antigen as determined by any method well known in the art, for example, by the immunoassays described herein. Immunospecific binding excludes non-specific binding but does not necessarily exclude cross- reactivity with other antigens. Antigenic epitopes need not necessarily be immunogenic.

[0128] Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

[0129] In the present invention, antigenic epitopes preferably contain a sequence of at least 4, at least 5, at least 6, at least 7, more preferably at least 8, at least 9, at least 10, at least 11, at least 12, at least 13, at least 14, at least 15, at least 20, at least 25, at least 30, at least 40, at least 50, and, most preferably, between about 15 to about 30 amino acids. Preferred polypeptides comprising immunogenic or antigenic epitopes are at least 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 amino acid

residues in length. Additional non-exclusive preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as portions thereof. Antigenic epitopes are useful, for example, to raise antibodies, including monoclonal antibodies, that specifically bind the epitope. Preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these antigenic epitopes. Antigenic epitopes can be used as the target molecules in immunoassays. (See, for instance, Wilson et al., Cell 37:767-778 (1984); Sutcliffe et al., Science 219:660-666 (1983)).

[0130] Non-limiting examples of epitopes of polypeptides that can be used to generate antibodies of the invention include a polypeptide comprising, or alternatively consisting of, at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y specified in column 6 of Table 1. These polypeptide fragments have been determined to bear antigenic epitopes of the proteins of the invention by the analysis of the Jameson-Wolf antigenic index which is included in the DNAStar suite of computer programs. By "comprise" it is intended that a polypeptide contains at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y shown in column 6 of Table 1, but it may contain additional flanking residues on either the amino or carboxyl termini of the recited portion. Such additional flanking sequences are preferably sequences naturally found adjacent to the portion; i.e., contiguous sequence shown in SEQ ID NO:Y. The flanking sequence may, however, be sequences from a heterologous polypeptide, such as from another protein described herein or from a heterologous polypeptide not described herein. In particular embodiments, epitope portions of a polypeptide of the invention comprise one, two, three, or more of the portions of SEQ ID NO:Y shown in column 6 of Table 1. Polynucleotides encoding these polypeptides are also encompassed by the invention.

[0131] Similarly, immunogenic epitopes can be used, for example, to induce antibodies according to methods well known in the art. See, for instance, Sutcliffe et al., *supra*; Wilson et al., *supra*; Chow et al., Proc. Natl. Acad. Sci. USA 82:910-914; and Bittle et al., J. Gen. Virol. 66:2347-2354 (1985). Preferred immunogenic epitopes include the immunogenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these immunogenic epitopes. The polypeptides comprising one

or more immunogenic epitopes may be presented for eliciting an antibody response together with a carrier protein, such as an albumin, to an animal system (such as rabbit or mouse), or, if the polypeptide is of sufficient length (at least about 25 amino acids), the polypeptide may be presented without a carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids have been shown to be sufficient to raise antibodies capable of binding to, at the very least, linear epitopes in a denatured polypeptide (e.g., in Western blotting).

[0132] Epitope-bearing polypeptides of the present invention may be used to induce antibodies according to methods well known in the art including, but not limited to, *in vivo* immunization, *in vitro* immunization, and phage display methods. See, e.g., Sutcliffe et al., *supra*; Wilson et al., *supra*, and Bittle et al., J. Gen. Virol., 66:2347-2354 (1985). If *in vivo* immunization is used, animals may be immunized with free peptide; however, anti-peptide antibody titer may be boosted by coupling the peptide to a macromolecular carrier, such as keyhole limpet hemacyanin (KLH) or tetanus toxoid. For instance, peptides containing cysteine residues may be coupled to a carrier using a linker such as maleimidobenzoyl- N-hydroxysuccinimide ester (MBS), while other peptides may be coupled to carriers using a more general linking agent such as glutaraldehyde. Animals such as rabbits, rats and mice are immunized with either free or carrier- coupled peptides, for instance, by intraperitoneal and/or intradermal injection of emulsions containing about 100 μg of peptide or carrier protein and Freund's adjuvant or any other adjuvant known for stimulating an immune response. Several booster injections may be needed, for instance, at intervals of about two weeks, to provide a useful titer of anti-peptide antibody which can be detected, for example, by ELISA assay using free peptide adsorbed to a solid surface. The titer of anti-peptide antibodies in serum from an immunized animal may be increased by selection of anti-peptide antibodies, for instance, by adsorption to the peptide on a solid support and elution of the selected antibodies according to methods well known in the art.

[0133] As one of skill in the art will appreciate, and as discussed above, the polypeptides of the present invention (e.g., those comprising an immunogenic or antigenic epitope) can be fused to heterologous polypeptide sequences. For example, polypeptides of the present invention (including fragments or variants thereof), may be fused with the

constant domain of immunoglobulins (IgA, IgE, IgG, IgM), or portions thereof (CH1, CH2, CH3, or any combination thereof and portions thereof, resulting in chimeric polypeptides. By way of another non-limiting example, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused with albumin (including but not limited to recombinant human serum albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by reference in their entirety)). In a preferred embodiment, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) are fused with the mature form of human serum albumin (i.e., amino acids 1 – 585 of human serum albumin as shown in Figures 1 and 2 of EP Patent 0 322 094) which is herein incorporated by reference in its entirety. In another preferred embodiment, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) are fused with polypeptide fragments comprising, or alternatively consisting of, amino acid residues 1-z of human serum albumin, where z is an integer from 369 to 419, as described in U.S. Patent 5,766,883 herein incorporated by reference in its entirety. Polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused to either the N- or C-terminal end of the heterologous protein (e.g., immunoglobulin Fc polypeptide or human serum albumin polypeptide). Polynucleotides encoding fusion proteins of the invention are also encompassed by the invention.

[0134] Such fusion proteins as those described above may facilitate purification and may increase half-life *in vivo*. This has been shown for chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See, e.g., EP 394,827; Traunecker et al., Nature, 331:84-86 (1988). Enhanced delivery of an antigen across the epithelial barrier to the immune system has been demonstrated for antigens (e.g., insulin) conjugated to an FcRn binding partner such as IgG or Fc fragments (see, e.g., PCT Publications WO 96/22024 and WO 99/04813). IgG Fusion proteins that have a disulfide-linked dimeric structure due to the IgG portion desulfide bonds have also been found to be more efficient in binding and neutralizing other molecules than monomeric polypeptides or fragments thereof alone. See, e.g., Fountoulakis et al., J.

Biochem., 270:3958-3964 (1995). Nucleic acids encoding the above epitopes can also be recombined with a gene of interest as an epitope tag (e.g., the hemagglutinin (HA) tag or flag tag) to aid in detection and purification of the expressed polypeptide. For example, a system described by Janknecht et al. allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht et al., 1991, Proc. Natl. Acad. Sci. USA 88:8972- 897). In this system, the gene of interest is subcloned into a vaccinia recombination plasmid such that the open reading frame of the gene is translationally fused to an amino-terminal tag consisting of six histidine residues. The tag serves as a matrix binding domain for the fusion protein. Extracts from cells infected with the recombinant vaccinia virus are loaded onto Ni2+ nitriloacetic acid-agarose column and histidine-tagged proteins can be selectively eluted with imidazole-containing buffers.

Fusion Proteins

[0135] Any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular locations based on trafficking signals, polypeptides of the present invention which are shown to be secreted can be used as targeting molecules once fused to other proteins.

[0136] Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

[0137] In certain preferred embodiments, proteins of the invention are fusion proteins comprising an amino acid sequence that is an N and/or C- terminal deletion of a polypeptide of the invention. In preferred embodiments, the invention is directed to a fusion protein comprising an amino acid sequence that is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence of the invention. Polynucleotides encoding these proteins are also encompassed by the invention.

[0138] Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids, particularly charged amino acids, may be added to the N-terminus of the polypeptide to improve stability and persistence during purification from the host cell or subsequent handling and storage. Also, peptide moieties may be added to the polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

[0139] As one of skill in the art will appreciate that, as discussed above, polypeptides of the present invention, and epitope-bearing fragments thereof, can be combined with heterologous polypeptide sequences. For example, the polypeptides of the present invention may be fused with heterologous polypeptide sequences, for example, the polypeptides of the present invention may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM) or portions thereof (CH1, CH2, CH3, and any combination thereof, including both entire domains and portions thereof), or albumin (including, but not limited to, native or recombinant human albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by reference in their entirety)), resulting in chimeric polypeptides. For example, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties (EP-A 0232 262). Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. See, D. Bennett et al., J. Molecular Recognition 8:52-58 (1995); K. Johanson et al., J. Biol. Chem. 270:9459-9471 (1995).

[0140] Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a polypeptide which facilitates purification of the fused polypeptide. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984).)

[0141] Additional fusion proteins of the invention may be generated through the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling"), briefly described below, and further described herein. DNA shuffling may be employed to modulate the activities of polypeptides of the invention, such methods can be used to generate polypeptides with altered activity, as well as agonists and antagonists of the polypeptides. See, generally, U.S. Patent Nos. 5,605,793; 5,811,238; 5,830,721; 5,834,252; and 5,837,458, and Patten et al., Curr. Opinion Biotechnol. 8:724-33 (1997); Harayama, Trends Biotechnol. 16(2):76-82 (1998); Hansson et al., J. Mol. Biol. 287:265-76 (1999); and Lorenzo and Blasco, Biotechniques 24(2):308-13 (1998); each of these patents and publications are hereby incorporated by reference in its entirety). In a preferred embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of a polynucleotide encoding a polypeptide of the invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc., of one or more heterologous molecules encoding a heterologous polypeptide.

[0142] Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the present invention.

Recombinant and Synthetic Production of Polypeptides of the Invention

[0143] The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by synthetic and recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or

retroviral vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

[0144] The polynucleotides of the invention may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid. If the vector is a virus, it may be packaged *in vitro* using an appropriate packaging cell line and then transduced into host cells.

[0145] The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the *E. coli lac, trp, phoA* and *tac* promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

[0146] As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418 or neomycin resistance, glutamine synthase, for eukaryotic cell culture and tetracycline, kanamycin or ampicillin resistance genes for culturing in *E. coli* and other bacteria. Representative examples of appropriate hosts include, but are not limited to, bacterial cells, such as *E. coli*, *Streptomyces* and *Salmonella typhimurium* cells; fungal cells, such as yeast cells (e.g., *Saccharomyces cerevisiae* or *Pichia pastoris* (ATCC Accession No. 201178)); insect cells such as *Drosophila* S2 and *Spodoptera* Sf9 cells; animal cells such as CHO, COS, 293, NSO and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

[0147] Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG

available from Stratagene; and pSVK3, pBPV, pMSG and pSVL available from Pharmacia. Preferred expression vectors for use in yeast systems include, but are not limited to pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalph, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, pPIC9K, and PAO815 (all available from Invitrogen, Carlsbad, CA). Other suitable vectors will be readily apparent to the skilled artisan.

[0148] Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be amplified in the presence of the drugs methionine sulphoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors is the availabilty of cell lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g., Chinese Hamster Ovary (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene. A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657 which are hereby incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors can be obtained from Lonza Biologics, Inc. (Portsmouth, NH). Expression and production of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington et al., Bio/technology 10:169(1992) and in Biblia and Robinson Biotechnol. Prog. 11:1 (1995) which are herein incorporated by reference.

[0149] The present invention also relates to host cells containing the above-described vector constructs described herein, and additionally encompasses host cells containing nucleotide sequences of the invention that are operably associated with one or more heterologous control regions (e.g., promoter and/or enhancer) using techniques known of in the art. The host cell can be a higher eukaryotic cell, such as a mammalian cell (e.g., a human derived cell), or a lower eukaryotic cell, such as a yeast cell, or the host cell can be a prokaryotic cell, such as a bacterial cell. A host strain may be chosen which modulates the expression of the inserted gene sequences, or modifies and processes the gene product in the specific fashion desired. Expression from certain promoters can be elevated in the presence of certain inducers; thus expression of the genetically engineered

polypeptide may be controlled. Furthermore, different host cells have characteristics and specific mechanisms for the translational and post-translational processing and modification (e.g., phosphorylation, cleavage) of proteins. Appropriate cell lines can be chosen to ensure the desired modifications and processing of the foreign protein expressed.

[0150] Introduction of the nucleic acids and nucleic acid constructs of the invention into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction, infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., Basic Methods In Molecular Biology (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

[0151] In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., ovarian antigen coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with ovarian associated polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous ovarian associated polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous ovarian associated polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent Number 5,641,670, issued June 24, 1997; International Publication Number WO 96/29411; International Publication Number WO 94/12650; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

[0152] Polypeptides of the present invention can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether directly isolated or cultured; products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast, higher plant, insect, and mammalian cells. Depending upon the host

employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition, polypeptides of the invention may also include an initial modified methionine residue, in some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal methionine on most proteins also is efficiently removed in most prokaryotes, for some proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

[0153] In one embodiment, the yeast *Pichia pastoris* is used to express polypeptides of the invention in a eukaryotic system. *Pichia pastoris* is a methylotrophic yeast which can metabolize methanol as its sole carbon source. A main step in the methanol metabolization pathway is the oxidation of methanol to formaldehyde using O_2. This reaction is catalyzed by the enzyme alcohol oxidase. In order to metabolize methanol as its sole carbon source, *Pichia pastoris* must generate high levels of alcohol oxidase due, in part, to the relatively low affinity of alcohol oxidase for O_2. Consequently, in a growth medium depending on methanol as a main carbon source, the promoter region of one of the two alcohol oxidase genes (*AOX1*) is highly active. In the presence of methanol, alcohol oxidase produced from the *AOX1* gene comprises up to approximately 30% of the total soluble protein in *Pichia pastoris*. See, Ellis, S.B., *et al., Mol. Cell. Biol.* 5:1111-21 (1985); Koutz, P.J, *et al., Yeast* 5:167-77 (1989); Tschopp, J.F., *et al., Nucl. Acids Res.* 15:3859-76 (1987). Thus, a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, under the transcriptional regulation of all or part of the *AOX1* regulatory sequence is expressed at exceptionally high levels in *Pichia* yeast grown in the presence of methanol.

[0154] In one example, the plasmid vector pPIC9K is used to express DNA encoding a polypeptide of the invention, as set forth herein, in a *Pichea* yeast system essentially as described in "*Pichia* Protocols: Methods in Molecular Biology," D.R. Higgins and J. Cregg, eds. The Humana Press, Totowa, NJ, 1998. This expression vector

allows expression and secretion of a polypeptide of the invention by virtue of the strong *AOX1* promoter linked to the *Pichia pastoris* alkaline phosphatase (PHO) secretory signal peptide (i.e., leader) located upstream of a multiple cloning site.

[0155] Many other yeast vectors could be used in place of pPIC9K, such as, pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalpha, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, and PAO815, as one skilled in the art would readily appreciate, as long as the proposed expression construct provides appropriately located signals for transcription, translation, secretion (if desired), and the like, including an in-frame AUG as required.

[0156] In another embodiment, high-level expression of a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, may be achieved by cloning the heterologous polynucleotide of the invention into an expression vector such as, for example, pGAPZ or pGAPZalpha, and growing the yeast culture in the absence of methanol.

[0157] In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

[0158] In addition, polypeptides of the invention can be chemically synthesized using techniques known in the art (e.g., see Creighton, 1983, Proteins: Structures and

Molecular Principles, W.H. Freeman & Co., N.Y., and Hunkapiller et al., *Nature*, 310:105-111 (1984)). For example, a polypeptide corresponding to a fragment of a polypeptide can be synthesized by use of a peptide synthesizer. Furthermore, if desired, nonclassical amino acids or chemical amino acid analogs can be introduced as a substitution or addition into the polypeptide sequence. Non-classical amino acids include, but are not limited to, to the D-isomers of the common amino acids, 2,4-diaminobutyric acid, a-amino isobutyric acid, 4-aminobutyric acid, Abu, 2-amino butyric acid, g-Abu, e-Ahx, 6-amino hexanoic acid, Aib, 2-amino isobutyric acid, 3-amino propionic acid, ornithine, norleucine, norvaline, hydroxyproline, sarcosine, citrulline, homocitrulline, cysteic acid, t-butylglycine, t-butylalanine, phenylglycine, cyclohexylalanine, b-alanine, fluoro-amino acids, designer amino acids such as b-methyl amino acids, Ca-methyl amino acids, Na-methyl amino acids, and amino acid analogs in general. Furthermore, the amino acid can be D (dextrorotary) or L (levorotary).

[0159] The invention encompasses polypeptides of the present invention which are differentially modified during or after translation, e.g., by glycosylation, acetylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to an antibody molecule or other cellular ligand, etc. Any of numerous chemical modifications may be carried out by known techniques, including but not limited, to specific chemical cleavage by cyanogen bromide, trypsin, chymotrypsin, papain, V8 protease, $NaBH_4$; acetylation, formylation, oxidation, reduction; metabolic synthesis in the presence of tunicamycin; etc.

[0160] Additional post-translational modifications encompassed by the invention include, for example, e.g., N-linked or O-linked carbohydrate chains, processing of N-terminal or C-terminal ends), attachment of chemical moieties to the amino acid backbone, chemical modifications of N-linked or O-linked carbohydrate chains, and addition or deletion of an N-terminal methionine residue as a result of procaryotic host cell expression. The polypeptides may also be modified with a detectable label, such as an enzymatic, fluorescent, isotopic or affinity label to allow for detection and isolation of the protein.

[0161] Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic

group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include iodine (^{121}I, ^{123}I, ^{125}I, ^{131}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{111}In, ^{112}In, ^{113m}In, ^{115m}In), technetium (^{99}Tc,^{99m}Tc), thallium (^{201}Ti), gallium (^{68}Ga, ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F), ^{153}Sm, ^{177}Lu, ^{159}Gd, ^{149}Pm, ^{140}La, ^{175}Yb, ^{166}Ho, ^{90}Y, ^{47}Sc, ^{186}Re, ^{188}Re, ^{142}Pr, ^{105}Rh, and ^{97}Ru.

[0162] In specific embodiments, a polypeptide of the present invention or fragment or variant thereof is attached to macrocyclic chelators that associate with radiometal ions, including but not limited to, ^{177}Lu, ^{90}Y, ^{166}Ho, and ^{153}Sm, to polypeptides. In a preferred embodiment, the radiometal ion associated with the macrocyclic chelators is ^{111}In. In another preferred embodiment, the radiometal ion associated with the macrocyclic chelator is ^{90}Y. In specific embodiments, the macrocyclic chelator is 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA). In other specific embodiments, DOTA is attached to an antibody of the invention or fragment thereof via a linker molecule. Examples of linker molecules useful for conjugating DOTA to a polypeptide are commonly known in the art - see, for example, DeNardo et al., Clin Cancer Res. 4(10):2483-90 (1998); Peterson et al., Bioconjug. Chem. 10(4):553-7 (1999); and Zimmerman et al, Nucl. Med. Biol. 26(8):943-50 (1999); which are hereby incorporated by reference in their entirety.

[0163] As mentioned, the ovarian associated proteins of the invention may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given ovarian associated polypeptide. Ovarian associated polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic ovarian associated polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent

attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphotidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992)).

[0164] Also provided by the invention are chemically modified derivatives of the polypeptides of the invention which may provide additional advantages such as increased solubility, stability and circulating time of the polypeptide, or decreased immunogenicity (see U.S. Patent No. 4,179,337). The chemical moieties for derivitization may be selected from water soluble polymers such as polyethylene glycol, ethylene glycol/propylene glycol copolymers, carboxymethylcellulose, dextran, polyvinyl alcohol and the like. The polypeptides may be modified at random positions within the molecule, or at predetermined positions within the molecule and may include one, two, three or more attached chemical moieties.

[0165] The polymer may be of any molecular weight, and may be branched or unbranched. For polyethylene glycol, the preferred molecular weight is between about 1 kDa and about 100 kDa (the term "about" indicating that in preparations of polyethylene glycol, some molecules will weigh more, some less, than the stated molecular weight) for ease in handling and manufacturing. Other sizes may be used, depending on the desired therapeutic profile (e.g., the duration of sustained release desired, the effects, if any on biological activity, the ease in handling, the degree or lack of antigenicity and other known effects of the polyethylene glycol to a therapeutic protein or analog). For example,

the polyethylene glycol may have an average molecular weight of about 200, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000, 8500, 9000, 9500, 10,000, 10,500, 11,000, 11,500, 12,000, 12,500, 13,000, 13,500, 14,000, 14,500, 15,000, 15,500, 16,000, 16,500, 17,000, 17,500, 18,000, 18,500, 19,000, 19,500, 20,000, 25,000, 30,000, 35,000, 40,000, 50,000, 55,000, 60,000, 65,000, 70,000, 75,000, 80,000, 85,000, 90,000, 95,000, or 100,000 kDa.

[0166] As noted above, the polyethylene glycol may have a branched structure. Branched polyethylene glycols are described, for example, in U.S. Patent No. 5,643,575; Morpurgo et al., Appl. Biochem. Biotechnol. 56:59-72 (1996); Vorobjev et al., Nucleosides Nucleotides 18:2745-2750 (1999); and Caliceti et al., Bioconjug. Chem. 10:638-646 (1999), the disclosures of each of which are incorporated herein by reference.

[0167] The polyethylene glycol molecules (or other chemical moieties) should be attached to the protein with consideration of effects on functional or antigenic domains of the protein. There are a number of attachment methods available to those skilled in the art, such as, for example, the method disclosed in EP 0 401 384 (coupling PEG to G-CSF), herein incorporated by reference; see also Malik et al., Exp. Hematol. 20:1028-1035 (1992), reporting pegylation of GM-CSF using tresyl chloride. For example, polyethylene glycol may be covalently bound through amino acid residues via a reactive group, such as a free amino or carboxyl group. Reactive groups are those to which an activated polyethylene glycol molecule may be bound. The amino acid residues having a free amino group may include lysine residues and the N-terminal amino acid residues; those having a free carboxyl group may include aspartic acid residues glutamic acid residues and the C-terminal amino acid residue. Sulfhydryl groups may also be used as a reactive group for attaching the polyethylene glycol molecules. Preferred for therapeutic purposes is attachment at an amino group, such as attachment at the N-terminus or lysine group.

[0168] As suggested above, polyethylene glycol may be attached to proteins via linkage to any of a number of amino acid residues. For example, polyethylene glycol can be linked to proteins via covalent bonds to lysine, histidine, aspartic acid, glutamic acid, or cysteine residues. One or more reaction chemistries may be employed to attach polyethylene glycol to specific amino acid residues (e.g., lysine, histidine, aspartic acid, glutamic acid, or cysteine) of the protein or to more than one type of amino acid residue

(e.g., lysine, histidine, aspartic acid, glutamic acid, cysteine and combinations thereof) of the protein.

[0169] One may specifically desire proteins chemically modified at the N-terminus. Using polyethylene glycol as an illustration of the present composition, one may select from a variety of polyethylene glycol molecules (by molecular weight, branching, etc.), the proportion of polyethylene glycol molecules to protein (polypeptide) molecules in the reaction mix, the type of pegylation reaction to be performed, and the method of obtaining the selected N-terminally pegylated protein. The method of obtaining the N-terminally pegylated preparation (i.e., separating this moiety from other monopegylated moieties if necessary) may be by purification of the N-terminally pegylated material from a population of pegylated protein molecules. Selective proteins chemically modified at the N-terminus modification may be accomplished by reductive alkylation which exploits differential reactivity of different types of primary amino groups (lysine versus the N-terminal) available for derivatization in a particular protein. Under the appropriate reaction conditions, substantially selective derivatization of the protein at the N-terminus with a carbonyl group containing polymer is achieved.

[0170] As indicated above, pegylation of the proteins of the invention may be accomplished by any number of means. For example, polyethylene glycol may be attached to the protein either directly or by an intervening linker. Linkerless systems for attaching polyethylene glycol to proteins are described in Delgado et al., Crit. Rev. Thera. Drug Carrier Sys. 9:249-304 (1992); Francis et al., Intern. J. of Hematol. 68:1-18 (1998); U.S. Patent No. 4,002,531; U.S. Patent No. 5,349,052; WO 95/06058; and WO 98/32466, the disclosures of each of which are incorporated herein by reference.

[0171] One system for attaching polyethylene glycol directly to amino acid residues of proteins without an intervening linker employs tresylated MPEG, which is produced by the modification of monmethoxy polyethylene glycol (MPEG) using tresylchloride ($ClSO_2CH_2CF_3$). Upon reaction of protein with tresylated MPEG, polyethylene glycol is directly attached to amine groups of the protein. Thus, the invention includes protein-polyethylene glycol conjugates produced by reacting proteins of the invention with a polyethylene glycol molecule having a 2,2,2-trifluoreothane sulphonyl group.

[0172] Polyethylene glycol can also be attached to proteins using a number of different intervening linkers. For example, U.S. Patent No. 5,612,460, the entire disclosure of which is incorporated herein by reference, discloses urethane linkers for connecting polyethylene glycol to proteins. Protein-polyethylene glycol conjugates wherein the polyethylene glycol is attached to the protein by a linker can also be produced by reaction of proteins with compounds such as MPEG-succinimidylsuccinate, MPEG activated with 1,1'-carbonyldiimidazole, MPEG-2,4,5-trichloropenylcarbonate, MPEG-p-nitrophenolcarbonate, and various MPEG-succinate derivatives. A number of additional polyethylene glycol derivatives and reaction chemistries for attaching polyethylene glycol to proteins are described in International Publication No. WO 98/32466, the entire disclosure of which is incorporated herein by reference. Pegylated protein products produced using the reaction chemistries set out herein are included within the scope of the invention.

[0173] The number of polyethylene glycol moieties attached to each protein of the invention (i.e., the degree of substitution) may also vary. For example, the pegylated proteins of the invention may be linked, on average, to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 17, 20, or more polyethylene glycol molecules. Similarly, the average degree of substitution within ranges such as 1-3, 2-4, 3-5, 4-6, 5-7, 6-8, 7-9, 8-10, 9-11, 10-12, 11-13, 12-14, 13-15, 14-16, 15-17, 16-18, 17-19, or 18-20 polyethylene glycol moieties per protein molecule. Methods for determining the degree of substitution are discussed, for example, in Delgado et al., Crit. Rev. Thera. Drug Carrier Sys. 9:249-304 (1992).

[0174] The ovarian associated polypeptides of the invention can be recovered and purified from chemical synthesis and recombinant cell cultures by standard methods which include, but are not limited to, ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification. Well known techniques for refolding protein may be employed to regenerate active conformation when the polypeptide is denatured during isolation and/or purification.

[0175] Ovarian associated polynucleotides and polypeptides may be used in

accordance with the present invention for a variety of applications, particularly those that make use of the chemical and biological properties of ovarian associated antigens. Among these are applications in the detection, prevention, diagnosis and/or treatment of diseases associated with the ovaries and/or breast, such as e.g., ovarian and/or breast cancer and tumors (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below), and as described under "Reproductive System Disorders" below. Additional applications relate to diagnosis and to treatment of disorders of cells, tissues and organisms. These aspects of the invention are discussed further below.

[0176] In a preferred embodiment, polynucleotides expressed in a particular tissue type (see, e.g., Table 1, column 7) are used to detect, diagnose, treat, prevent and/or prognose disorders associated with the tissue type.

[0177] The polypeptides of the invention may be in monomers or multimers (i.e., dimers, trimers, tetramers and higher multimers). Accordingly, the present invention relates to monomers and multimers of the polypeptides of the invention, their preparation, and compositions (preferably, Therapeutics) containing them. In specific embodiments, the polypeptides of the invention are monomers, dimers, trimers or tetramers. In additional embodiments, the multimers of the invention are at least dimers, at least trimers, or at least tetramers.

[0178] Multimers encompassed by the invention may be homomers or heteromers. As used herein, the term homomer refers to a multimer containing only polypeptides corresponding to a protein of the invention (e.g., the amino acid sequence of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X or the complement of SEQ ID NO:X, the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or an amino acid sequence encoded by cDNA contained in Clone ID NO:Z (including fragments, variants, splice variants, and fusion proteins, corresponding to these as described herein)). These homomers may contain polypeptides having identical or different amino acid sequences. In a specific embodiment, a homomer of the invention is a multimer containing only polypeptides having an identical amino acid

sequence. In another specific embodiment, a homomer of the invention is a multimer containing polypeptides having different amino acid sequences. In specific embodiments, the multimer of the invention is a homodimer (e.g., containing two polypeptides having identical or different amino acid sequences) or a homotrimer (e.g., containing three polypeptides having identical and/or different amino acid sequences). In additional embodiments, the homomeric multimer of the invention is at least a homodimer, at least a homotrimer, or at least a homotetramer.

[0179] As used herein, the term heteromer refers to a multimer containing two or more heterologous polypeptides (i.e., polypeptides of different proteins) in addition to the polypeptides of the invention. In a specific embodiment, the multimer of the invention is a heterodimer, a heterotrimer, or a heterotetramer. In additional embodiments, the heteromeric multimer of the invention is at least a heterodimer, at least a heterotrimer, or at least a heterotetramer.

[0180] Multimers of the invention may be the result of hydrophobic, hydrophilic, ionic and/or covalent associations and/or may be indirectly linked by, for example, liposome formation. Thus, in one embodiment, multimers of the invention, such as, for example, homodimers or homotrimers, are formed when polypeptides of the invention contact one another in solution. In another embodiment, heteromultimers of the invention, such as, for example, heterotrimers or heterotetramers, are formed when polypeptides of the invention contact antibodies to the polypeptides of the invention (including antibodies to the heterologous polypeptide sequence in a fusion protein of the invention) in solution. In other embodiments, multimers of the invention are formed by covalent associations with and/or between the polypeptides of the invention. Such covalent associations may involve one or more amino acid residues contained in the polypeptide sequence (e.g., that recited in SEQ ID NO:Y, encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or encoded by the cDNA contained in Clone ID NO:Z). In one instance, the covalent associations are cross-linking between cysteine residues located within the polypeptide sequences which interact in the native (i.e., naturally occurring) polypeptide. In another instance, the covalent associations are the consequence of chemical or recombinant manipulation. Alternatively, such covalent associations may involve one or more amino acid residues contained in the heterologous polypeptide

sequence in a fusion protein. In one example, covalent associations are between the heterologous sequence contained in a fusion protein of the invention (see, e.g., U.S. Patent Number 5,478,925). In a specific example, the covalent associations are between the heterologous sequence contained in a Fc fusion protein of the invention (as described herein). In another specific example, covalent associations of fusion proteins of the invention are between heterologous polypeptide sequence from another protein that is capable of forming covalently associated multimers, such as for example, osteoprotegerin (see, e.g., International Publication NO: WO 98/49305, the contents of which are herein incorporated by reference in its entirety). In another embodiment, two or more polypeptides of the invention are joined through peptide linkers. Examples include those peptide linkers described in U.S. Pat. No. 5,073,627 (hereby incorporated by reference). Proteins comprising multiple polypeptides of the invention separated by peptide linkers may be produced using conventional recombinant DNA technology.

[0181] Another method for preparing multimer polypeptides of the invention involves use of polypeptides of the invention fused to a leucine zipper or isoleucine zipper polypeptide sequence. Leucine zipper and isoleucine zipper domains are polypeptides that promote multimerization of the proteins in which they are found. Leucine zippers were originally identified in several DNA-binding proteins (Landschulz et al., Science 240:1759, (1988)), and have since been found in a variety of different proteins. Among the known leucine zippers are naturally occurring peptides and derivatives thereof that dimerize or trimerize. Examples of leucine zipper domains suitable for producing soluble multimeric proteins of the invention are those described in PCT application WO 94/10308, hereby incorporated by reference. Recombinant fusion proteins comprising a polypeptide of the invention fused to a polypeptide sequence that dimerizes or trimerizes in solution are expressed in suitable host cells, and the resulting soluble multimeric fusion protein is recovered from the culture supernatant using techniques known in the art.

[0182] Trimeric polypeptides of the invention may offer the advantage of enhanced biological activity. Preferred leucine zipper moieties and isoleucine moieties are those that preferentially form trimers. One example is a leucine zipper derived from lung surfactant protein D (SPD), as described in Hoppe et al. (FEBS Letters 344:191, (1994)) and in U.S. patent application Ser. No. 08/446,922, hereby incorporated by

reference. Other peptides derived from naturally occurring trimeric proteins may be employed in preparing trimeric polypeptides of the invention.

[0183] In another example, proteins of the invention are associated by interactions between Flag® polypeptide sequence contained in fusion proteins of the invention containing Flag® polypeptide sequence. In a further embodiment, proteins of the invention are associated by interactions between heterologous polypeptide sequence contained in Flag® fusion proteins of the invention and anti-Flag® antibody.

[0184] The multimers of the invention may be generated using chemical techniques known in the art. For example, polypeptides desired to be contained in the multimers of the invention may be chemically cross-linked using linker molecules and linker molecule length optimization techniques known in the art (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, multimers of the invention may be generated using techniques known in the art to form one or more inter-molecule cross-links between the cysteine residues located within the sequence of the polypeptides desired to be contained in the multimer (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Further, polypeptides of the invention may be routinely modified by the addition of cysteine or biotin to the C-terminus or N-terminus of the polypeptide and techniques known in the art may be applied to generate multimers containing one or more of these modified polypeptides (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, techniques known in the art may be applied to generate liposomes containing the polypeptide components desired to be contained in the multimer of the invention (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

[0185] Alternatively, multimers of the invention may be generated using genetic engineering techniques known in the art. In one embodiment, polypeptides contained in multimers of the invention are produced recombinantly using fusion protein technology described herein or otherwise known in the art (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In a specific embodiment, polynucleotides coding for a homodimer of the invention are generated by ligating a polynucleotide sequence encoding a polypeptide of the invention to a sequence encoding a

linker polypeptide and then further to a synthetic polynucleotide encoding the translated product of the polypeptide in the reverse orientation from the original C-terminus to the N-terminus (lacking the leader sequence) (see, e.g., U..S Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In another embodiment, recombinant techniques described herein or otherwise known in the art are applied to generate recombinant polypeptides of the invention which contain a transmembrane domain (or hydrophobic or signal peptide) and which can be incorporated by membrane reconstitution techniques into liposomes (see, e.g., U.S. Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Antibodies

[0186] Further polypeptides of the invention relate to antibodies and T-cell antigen receptors (TCR) which immunospecifically bind a polypeptide, polypeptide fragment, or variant of the invention (e.g., a polypeptide or fragment or variant of the amino acid sequence of SEQ ID NO:Y or a polypeptide encoded by the cDNA contained in Clone ID NO:Z, and/or an epitope, of the present invention) as determined by immunoassays well known in the art for assaying specific antibody-antigen binding. Antibodies of the invention include, but are not limited to, polyclonal, monoclonal, multispecific, human, humanized or chimeric antibodies, single chain antibodies, Fab fragments, F(ab') fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies (including, e.g., anti-Id antibodies to antibodies of the invention), intracellularly-made antibodies (i.e., intrabodies), and epitope-binding fragments of any of the above. The term "antibody," as used herein, refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, i.e., molecules that contain an antigen binding site that immunospecifically binds an antigen. The immunoglobulin molecules of the invention can be of any type (e.g., IgG, IgE, IgM, IgD, IgA and IgY), class (e.g., IgG1, IgG2, IgG3, IgG4, IgA1 and IgA2) or subclass of immunoglobulin molecule. In preferred embodiments, the immunoglobulin molecules of the invention are IgG1. In other preferred embodiments, the immunoglobulin molecules of the invention are IgG4.

[0187] Most preferably the antibodies are human antigen-binding antibody fragments of the present invention and include, but are not limited to, Fab, Fab' and F(ab')2, Fd, single-chain Fvs (scFv), single-chain antibodies, disulfide-linked Fvs (sdFv) and fragments comprising either a VL or VH domain. Antigen-binding antibody fragments, including single-chain antibodies, may comprise the variable region(s) alone or in combination with the entirety or a portion of the following: hinge region, CH1, CH2, and CH3 domains. Also included in the invention are antigen-binding fragments also comprising any combination of variable region(s) with a hinge region, CH1, CH2, and CH3 domains. The antibodies of the invention may be from any animal origin including birds and mammals. Preferably, the antibodies are human, murine (e.g., mouse and rat), donkey, ship rabbit, goat, guinea pig, camel, horse, or chicken. As used herein, "human" antibodies include antibodies having the amino acid sequence of a human immunoglobulin and include antibodies isolated from human immunoglobulin libraries or from animals transgenic for one or more human immunoglobulin and that do not express endogenous immunoglobulins, as described *infra* and, for example in, U.S. Patent No. 5,939,598 by Kucherlapati et al.

[0188] The antibodies of the present invention may be monospecific, bispecific, trispecific or of greater multispecificity. Multispecific antibodies may be specific for different epitopes of a polypeptide of the present invention or may be specific for both a polypeptide of the present invention as well as for a heterologous epitope, such as a heterologous polypeptide or solid support material. See, e.g., PCT publications WO 93/17715; WO 92/08802; WO 91/00360; WO 92/05793; Tutt, et al., J. Immunol. 147:60-69 (1991); U.S. Patent Nos. 4,474,893; 4,714,681; 4,925,648; 5,573,920; 5,601,819; Kostelny et al., J. Immunol. 148:1547-1553 (1992).

[0189] Antibodies of the present invention may be described or specified in terms of the epitope(s) or portion(s) of a polypeptide of the present invention which they recognize or specifically bind. The epitope(s) or polypeptide portion(s) may be specified as described herein, e.g., by N-terminal and C-terminal positions, or by size in contiguous amino acid residues, or listed in the Tables and Figures. Preferred epitopes of the invention include those shown in column 6 of Table 1, as well as polynucleotides that encode these epitopes. Antibodies which specifically bind any epitope or polypeptide of

the present invention may also be excluded. Therefore, the present invention includes antibodies that specifically bind polypeptides of the present invention, and allows for the exclusion of the same.

[0190] Antibodies of the present invention may also be described or specified in terms of their cross-reactivity. Antibodies that do not bind any other analog, ortholog, or homolog of a polypeptide of the present invention are included. Antibodies that bind polypeptides with at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 65%, at least 60%, at least 55%, and at least 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In specific embodiments, antibodies of the present invention cross-react with murine, rat and/or rabbit homologs of human proteins and the corresponding epitopes thereof. Antibodies that do not bind polypeptides with less than 95%, less than 90%, less than 85%, less than 80%, less than 75%, less than 70%, less than 65%, less than 60%, less than 55%, and less than 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In a specific embodiment, the above-described cross-reactivity is with respect to any single specific antigenic or immunogenic polypeptide, or combination(s) of 2, 3, 4, 5, or more of the specific antigenic and/or immunogenic polypeptides disclosed herein. Further included in the present invention are antibodies which bind polypeptides encoded by polynucleotides which hybridize to a polynucleotide of the present invention under stringent hybridization conditions (as described herein). Antibodies of the present invention may also be described or specified in terms of their binding affinity to a polypeptide of the invention. Preferred binding affinities include those with a dissociation constant or Kd less than 5 X 10^{-2} M, 10^{-2} M, 5 X 10^{-3} M, 10^{-3} M, 5 X 10^{-4} M, 10^{-4} M, 5 X 10^{-5} M, 10^{-5} M, 5 X 10^{-6} M, 10^{-6}M, 5 X 10^{-7} M, 10^{7} M, 5 X 10^{-8} M, 10^{-8} M, 5 X 10^{-9} M, 10^{-9} M, 5 X 10^{-10} M, 10^{-10} M, 5 X 10^{-11} M, 10^{-11} M, 5 X 10^{-12} M, 10^{-12} M, 5 X 10^{-13} M, 10^{-13} M, 5 X 10^{-14} M, 10^{-14} M, 5 X 10^{-15} M, or 10^{-15} M.

[0191] The invention also provides antibodies that competitively inhibit binding of an antibody to an epitope of the invention as determined by any method known in the art for determining competitive binding, for example, the immunoassays described herei-n.

In preferred embodiments, the antibody competitively inhibits binding to the epitope by at least 95%, at least 90%, at least 85 %, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50%.

[0192] Antibodies of the present invention may act as agonists or antagonists of the polypeptides of the present invention. For example, the present invention includes antibodies which disrupt the receptor/ligand interactions with the polypeptides of the invention either partially or fully. Preferably, antibodies of the present invention bind an antigenic epitope disclosed herein, or a portion thereof. The invention features both receptor-specific antibodies and ligand-specific antibodies. The invention also features receptor-specific antibodies which do not prevent ligand binding but prevent receptor activation. Receptor activation (i.e., signaling) may be determined by techniques described herein or otherwise known in the art. For example, receptor activation can be determined by detecting the phosphorylation (e.g., tyrosine or serine/threonine) of the receptor or its substrate by immunoprecipitation followed by western blot analysis (for example, as described *supra*). In specific embodiments, antibodies are provided that inhibit ligand activity or receptor activity by at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50% of the activity in absence of the antibody.

[0193] The invention also features receptor-specific antibodies which both prevent ligand binding and receptor activation as well as antibodies that recognize the receptor-ligand complex, and, preferably, do not specifically recognize the unbound receptor or the unbound ligand. Likewise, included in the invention are neutralizing antibodies which bind the ligand and prevent binding of the ligand to the receptor, as well as antibodies which bind the ligand, thereby preventing receptor activation, but do not prevent the ligand from binding the receptor. Further included in the invention are antibodies which activate the receptor. These antibodies may act as receptor agonists, i.e., potentiate or activate either all or a subset of the biological activities of the ligand-mediated receptor activation, for example, by inducing dimerization of the receptor. The antibodies may be specified as agonists, antagonists or inverse agonists for biological activities comprising the specific biological activities of the peptides of the invention disclosed herein. The above antibody agonists can be made using methods known in the art. See, e.g., PCT

publication WO 96/40281; U.S. Patent No. 5,811,097; Deng et al., Blood 92(6):1981-1988 (1998); Chen et al., Cancer Res. 58(16):3668-3678 (1998); Harrop et al., J. Immunol. 161(4):1786-1794 (1998); Zhu et al., Cancer Res. 58(15):3209-3214 (1998); Yoon et al., J. Immunol. 160(7):3170-3179 (1998); Prat et al., J. Cell. Sci. 111(Pt2):237-247 (1998); Pitard et al., J. Immunol. Methods 205(2):177-190 (1997); Liautard et al., Cytokine 9(4):233-241 (1997); Carlson et al., J. Biol. Chem. 272(17):11295-11301 (1997); Taryman et al., Neuron 14(4):755-762 (1995); Muller et al., Structure 6(9):1153-1167 (1998); Bartunek et al., Cytokine 8(1):14-20 (1996) (which are all incorporated by reference herein in their entireties).

[0194] Antibodies of the present invention may be used, for example, to purify, detect, and target the polypeptides of the present invention, including both *in vitro* and *in vivo* diagnostic and therapeutic methods. For example, the antibodies have utility in immunoassays for qualitatively and quantitatively measuring levels of the polypeptides of the present invention in biological samples. See, e.g., Harlow et al., Antibodies: A Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); incorporated by reference herein in its entirety.

[0195] As discussed in more detail below, the antibodies of the present invention may be used either alone or in combination with other compositions. The antibodies may further be recombinantly fused to a heterologous polypeptide at the N- or C-terminus or chemically conjugated (including covalent and non-covalent conjugations) to polypeptides or other compositions. For example, antibodies of the present invention may be recombinantly fused or conjugated to molecules useful as labels in detection assays and effector molecules such as heterologous polypeptides, drugs, radionuclides, or toxins. See, e.g., PCT publications WO 92/08495; WO 91/14438; WO 89/12624; U.S. Patent No. 5,314,995; and EP 396,387; the disclosures of which are incorporated herein by reference in their entireties.

[0196] The antibodies of the invention include derivatives that are modified, i.e., by the covalent attachment of any type of molecule to the antibody such that covalent attachment does not prevent the antibody from generating an anti-idiotypic response. For example, but not by way of limitation, the antibody derivatives include antibodies that have been modified, e.g., by glycosylation, acetylation, pegylation, phosphylation,

amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to a cellular ligand or other protein, etc. Any of numerous chemical modifications may be carried out by known techniques, including, but not limited to specific chemical cleavage, acetylation, formylation, metabolic synthesis of tunicamycin, etc. Additionally, the derivative may contain one or more non-classical amino acids.

[0197] The antibodies of the present invention may be generated by any suitable method known in the art. Polyclonal antibodies to an antigen-of- interest can be produced by various procedures well known in the art. For example, a polypeptide of the invention can be administered to various host animals including, but not limited to, rabbits, mice, rats, etc. to induce the production of sera containing polyclonal antibodies specific for the antigen. Various adjuvants may be used to increase the immunological response, depending on the host species, and include but are not limited to, Freund's (complete and incomplete), mineral gels such as aluminum hydroxide, surface active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and corynebacterium parvum. Such adjuvants are also well known in the art.

[0198] Monoclonal antibodies can be prepared using a wide variety of techniques known in the art including the use of hybridoma, recombinant, and phage display technologies, or a combination thereof. For example, monoclonal antibodies can be produced using hybridoma techniques including those known in the art and taught, for example, in Harlow et al., Antibodies: A Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); Hammerling, et al., in: Monoclonal Antibodies and T-Cell Hybridomas 563-681 (Elsevier, N.Y., 1981) (said references incorporated by reference in their entireties). The term "monoclonal antibody" as used herein is not limited to antibodies produced through hybridoma technology. The term "monoclonal antibody" refers to an antibody that is derived from a single clone, including any eukaryotic, prokaryotic, or phage clone, and not the method by which it is produced.

[0199] Methods for producing and screening for specific antibodies using hybridoma technology are routine and well known in the art and are discussed in detail in the Examples. In a non-limiting example, mice can be immunized with a polypeptide of

the invention or a cell expressing such peptide. Once an immune response is detected, e.g., antibodies specific for the antigen are detected in the mouse serum, the mouse spleen is harvested and splenocytes isolated. The splenocytes are then fused by well known techniques to any suitable myeloma cells, for example cells from cell line SP20 available from the ATCC. Hybridomas are selected and cloned by limited dilution. The hybridoma clones are then assayed by methods known in the art for cells that secrete antibodies capable of binding a polypeptide of the invention. Ascites fluid, which generally contains high levels of antibodies, can be generated by immunizing mice with positive hybridoma clones.

[0200] Accordingly, the present invention provides methods of generating monoclonal antibodies as well as antibodies produced by the method comprising culturing a hybridoma cell secreting an antibody of the invention wherein, preferably, the hybridoma is generated by fusing splenocytes isolated from a mouse immunized with an antigen of the invention with myeloma cells and then screening the hybridomas resulting from the fusion for hybridoma clones that secrete an antibody able to bind a polypeptide of the invention.

[0201] Another well known method for producing both polyclonal and monoclonal human B cell lines is transformation using Epstein Barr Virus (EBV). Protocols for generating EBV-transformed B cell lines are commonly known in the art, such as, for example, the protocol outlined in Chapter 7.22 of Current Protocols in Immunology, Coligan et al., Eds., 1994, John Wiley & Sons, NY, which is hereby incorporated in its entirety by reference herein. The source of B cells for transformation is commonly human peripheral blood, but B cells for transformation may also be derived from other sources including, but not limited to, lymph nodes, tonsil, spleen, tumor tissue, and infected tissues. Tissues are generally made into single cell suspensions prior to EBV transformation. Additionally, steps may be taken to either physically remove or inactivate T cells (e.g., by treatment with cyclosporin A) in B cell-containing samples, because T cells from individuals seropositive for anti-EBV antibodies can suppress B cell immortalization by EBV.

[0202] In general, the sample containing human B cells is innoculated with EBV, and cultured for 3-4 weeks. A typical source of EBV is the culture supernatant of the B95-

8 cell line (ATCC #VR-1492). Physical signs of EBV transformation can generally be seen towards the end of the 3-4 week culture period. By phase-contrast microscopy, transformed cells may appear large, clear, hairy and tend to aggregate in tight clusters of cells. Initially, EBV lines are generally polyclonal. However, over prolonged periods of cell cultures, EBV lines may become monoclonal or polyclonal as a result of the selective outgrowth of particular B cell clones. Alternatively, polyclonal EBV transformed lines may be subcloned (e.g., by limiting dilution culture) or fused with a suitable fusion partner and plated at limiting dilution to obtain monoclonal B cell lines. Suitable fusion partners for EBV transformed cell lines include mouse myeloma cell lines (e.g., SP2/0, X63-Ag8.653), heteromyeloma cell lines (human x mouse; e.g, SPAM-8, SBC-H20, and CB-F7), and human cell lines (e.g., GM 1500, SKO-007, RPMI 8226, and KR-4). Thus, the present invention also provides a method of generating polyclonal or monoclonal human antibodies against polypeptides of the invention or fragments thereof, comprising EBV-transformation of human B cells.

[0203] Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, Fab and F(ab')2 fragments of the invention may be produced by proteolytic cleavage of immunoglobulin molecules, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')2 fragments). F(ab')2 fragments contain the variable region, the light chain constant region and the CH1 domain of the heavy chain. For example, the antibodies of the present invention can also be generated using various phage display methods known in the art and as discussed in detail in the Examples (e.g., Example 10). In phage display methods, functional antibody domains are displayed on the surface of phage particles which carry the polynucleotide sequences encoding them. In a particular embodiment, such phage can be utilized to display antigen binding domains expressed from a repertoire or combinatorial antibody library (e.g., human or murine). Phage expressing an antigen binding domain that binds the antigen of interest can be selected or identified with antigen, e.g., using labeled antigen or antigen bound or captured to a solid surface or bead. Phage used in these methods are typically filamentous phage including fd and M13 binding domains expressed from phage with Fab, Fv or disulfide stabilized Fv antibody domains recombinantly fused to either the phage gene III or gene VIII protein. Examples of phage display methods that can be

used to make the antibodies of the present invention include those disclosed in Brinkman et al., J. Immunol. Methods 182:41-50 (1995); Ames et al., J. Immunol. Methods 184:177-186 (1995); Kettleborough et al., Eur. J. Immunol. 24:952-958 (1994); Persic et al., Gene 187 9-18 (1997); Burton et al., Advances in Immunology 57:191-280 (1994); PCT application No. PCT/GB91/01134; PCT publications WO 90/02809; WO 91/10737; WO 92/01047; WO 92/18619; WO 93/11236; WO 95/15982; WO 95/20401; and U.S. Patent Nos. 5,698,426; 5,223,409; 5,403,484; 5,580,717; 5,427,908; 5,750,753; 5,821,047; 5,571,698; 5,427,908; 5,516,637; 5,780,225; 5,658,727; 5,733,743 and 5,969,108; each of which is incorporated herein by reference in its entirety.

[0204] As described in the above references, after phage selection, the antibody coding regions from the phage can be isolated and used to generate whole antibodies, including human antibodies, or any other desired antigen binding fragment, and expressed in any desired host, including mammalian cells, insect cells, plant cells, yeast, and bacteria, e.g., as described in detail below. For example, techniques to recombinantly produce Fab, Fab' and F(ab')2 fragments can also be employed using methods known in the art such as those disclosed in PCT publication WO 92/22324; Mullinax et al., BioTechniques 12(6):864-869 (1992); and Sawai et al., AJRI 34:26-34 (1995); and Better et al., Science 240:1041-1043 (1988) (said references incorporated by reference in their entireties).

[0205] Examples of techniques which can be used to produce single-chain Fvs and antibodies include those described in U.S. Patents 4,946,778 and 5,258,498; Huston et al., Methods in Enzymology 203:46-88 (1991); Shu et al., PNAS 90:7995-7999 (1993); and Skerra et al., Science 240:1038-1040 (1988). For some uses, including *in vivo* use of antibodies in humans and *in vitro* detection assays, it may be preferable to use chimeric, humanized, or human antibodies. A chimeric antibody is a molecule in which different portions of the antibody are derived from different animal species, such as antibodies having a variable region derived from a murine monoclonal antibody and a human immunoglobulin constant region. Methods for producing chimeric antibodies are known in the art. See e.g., Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Gillies et al., (1989) J. Immunol. Methods 125:191-202; U.S. Patent Nos. 5,807,715; 4,816,567; and 4,816397, which are incorporated herein by reference in their

entirety. Humanized antibodies are antibody molecules from non-human species antibody that binds the desired antigen having one or more complementarity determining regions (CDRs) from the non-human species and a framework regions from a human immunoglobulin molecule. Often, framework residues in the human framework regions will be substituted with the corresponding residue from the CDR donor antibody to alter, preferably improve, antigen binding. These framework substitutions are identified by methods well known in the art, e.g., by modeling of the interactions of the CDR and framework residues to identify framework residues important for antigen binding and sequence comparison to identify unusual framework residues at particular positions. (See, e.g., Queen et al., U.S. Patent No. 5,585,089; Riechmann et al., Nature 332:323 (1988), which are incorporated herein by reference in their entireties.) Antibodies can be humanized using a variety of techniques known in the art including, for example, CDR-grafting (EP 239,400; PCT publication WO 91/09967; U.S. Patent Nos. 5,225,539; 5,530,101; and 5,585,089), veneering or resurfacing (EP 592,106; EP 519,596; Padlan, Molecular Immunology 28(4/5):489-498 (1991); Studnicka et al., Protein Engineering 7(6):805-814 (1994); Roguska. et al., PNAS 91:969-973 (1994)), and chain shuffling (U.S. Patent No. 5,565,332).

[0206] Completely human antibodies are particularly desirable for therapeutic treatment of human patients. Human antibodies can be made by a variety of methods known in the art including phage display methods described above using antibody libraries derived from human immunoglobulin sequences. See also, U.S. Patent Nos. 4,444,887 and 4,716,111; and PCT publications WO 98/46645, WO 98/50433, WO 98/24893, WO 98/16654, WO 96/34096, WO 96/33735, and WO 91/10741; each of which is incorporated herein by reference in its entirety.

[0207] Human antibodies can also be produced using transgenic mice which are incapable of expressing functional endogenous immunoglobulins, but which can express human immunoglobulin genes. For example, the human heavy and light chain immunoglobulin gene complexes may be introduced randomly or by homologous recombination into mouse embryonic stem cells. Alternatively, the human variable region, constant region, and diversity region may be introduced into mouse embryonic stem cells in addition to the human heavy and light chain genes. The mouse heavy and

light chain immunoglobulin genes may be rendered non-functional separately or simultaneously with the introduction of human immunoglobulin loci by homologous recombination. In particular, homozygous deletion of the JH region prevents endogenous antibody production. The modified embryonic stem cells are expanded and microinjected into blastocysts to produce chimeric mice. The chimeric mice are then bred to produce homozygous offspring which express human antibodies. The transgenic mice are immunized in the normal fashion with a selected antigen, e.g., all or a portion of a polypeptide of the invention. Monoclonal antibodies directed against the antigen can be obtained from the immunized, transgenic mice using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA, IgM and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar, Int. Rev. Immunol. 13:65-93 (1995). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, e.g., PCT publications WO 98/24893; WO 92/01047; WO 96/34096; WO 96/33735; European Patent No. 0 598 877; U.S. Patent Nos. 5,413,923; 5,625,126; 5,633,425; 5,569,825; 5,661,016; 5,545,806; 5,814,318; 5,885,793; 5,916,771; 5,939,598; 6,075,181 and 6,114,598, which are incorporated by reference herein in their entirety. In addition, companies such as Abgenix, Inc. (Freemont, CA) and Genpharm (San Jose, CA) can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

[0208] Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, e.g., a mouse antibody, is used to guide the selection of a completely human antibody recognizing the same epitope. (Jespers et al., Bio/technology 12:899-903 (1988)).

[0209] Further, antibodies to the polypeptides of the invention can, in turn, be utilized to generate anti-idiotype antibodies that "mimic" polypeptides of the invention using techniques well known to those skilled in the art. (See, e.g., Greenspan & Bona,

FASEB J. 7(5):437-444; (1989) and Nissinoff, J. Immunol. 147(8):2429-2438 (1991)). For example, antibodies which bind to and competitively inhibit polypeptide multimerization and/or binding of a polypeptide of the invention to a ligand can be used to generate anti-idiotypes that "mimic" the polypeptide multimerization and/or binding domain and, as a consequence, bind to and neutralize polypeptide and/or its ligand. Such neutralizing anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens to neutralize polypeptide ligand/receptor. For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby block its biological activity. Alternatively, antibodies which bind to and enhance polypeptide multimerization and/or binding, and/or receptor/ligand multimerization, binding and/or signaling can be used to generate anti-idiotypes that function as agonists of a polypeptide of the invention and/or its ligand/receptor. Such agonistic anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens as agonists of the polypeptides of the invention or its ligand(s)/receptor(s). For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby promote or enhance its biological activity.

[0210] Intrabodies of the invention can be produced using methods known in the art, such as those disclosed and reviewed in Chen et al., Hum. Gene Ther. 5:595-601 (1994); Marasco, W.A., Gene Ther. 4:11-15 (1997); Rondon and Marasco, Annu. Rev. Microbiol. 51:257-283 (1997); Proba et al., J. Mol. Biol. 275:245-253 (1998); Cohen et al., Oncogene 17:2445-2456 (1998); Ohage and Steipe, J. Mol. Biol. 291:1119-1128 (1999); Ohage et al., J. Mol. Biol. 291:1129-1134 (1999); Wirtz and Steipe, Protein Sci. 8:2245-2250 (1999); Zhu et al., J. Immunol. Methods 231:207-222 (1999); and references cited therein.

Polynucleotides Encoding Antibodies

[0211] The invention further provides polynucleotides comprising a nucleotide sequence encoding an antibody of the invention and fragments thereof. The invention also encompasses polynucleotides that hybridize under stringent or alternatively, under lower stringency hybridization conditions, e.g., as defined *supra*, to polynucleotides that encode

an antibody, preferably, that specifically binds to a polypeptide of the invention, preferably, an antibody that binds to a polypeptide having the amino acid sequence of SEQ ID NO:Y, to a polypeptide encoded by a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or to a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0212] The polynucleotides may be obtained, and the nucleotide sequence of the polynucleotides determined, by any method known in the art. For example, if the nucleotide sequence of the antibody is known, a polynucleotide encoding the antibody may be assembled from chemically synthesized oligonucleotides (e.g., as described in Kutmeier et al., BioTechniques 17:242 (1994)), which, briefly, involves the synthesis of overlapping oligonucleotides containing portions of the sequence encoding the antibody, annealing and ligating of those oligonucleotides, and then amplification of the ligated oligonucleotides by PCR.

[0213] Alternatively, a polynucleotide encoding an antibody may be generated from nucleic acid from a suitable source. If a clone containing a nucleic acid encoding a particular antibody is not available, but the sequence of the antibody molecule is known, a nucleic acid encoding the immunoglobulin may be chemically synthesized or obtained from a suitable source (e.g., an antibody cDNA library, or a cDNA library generated from, or nucleic acid, preferably poly A+ RNA, isolated from, any tissue or cells expressing the antibody, such as hybridoma cells selected to express an antibody of the invention) by PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the sequence or by cloning using an oligonucleotide probe specific for the particular gene sequence to identify, e.g., a cDNA clone from a cDNA library that encodes the antibody. Amplified nucleic acids generated by PCR may then be cloned into replicable cloning vectors using any method well known in the art.

[0214] Once the nucleotide sequence and corresponding amino acid sequence of the antibody is determined, the nucleotide sequence of the antibody may be manipulated using methods well known in the art for the manipulation of nucleotide sequences, e.g., recombinant DNA techniques, site directed mutagenesis, PCR, etc. (see, for example, the techniques described in Sambrook et al., 1990, Molecular Cloning, A Laboratory Manual, 2d Ed., Cold Spring Harbor Laboratory, Cold Spring Harbor, NY and Ausubel et al., eds.,

1998, Current Protocols in Molecular Biology, John Wiley & Sons, NY, which are both incorporated by reference herein in their entireties), to generate antibodies having a different amino acid sequence, for example to create amino acid substitutions, deletions, and/or insertions.

[0215] In a specific embodiment, the amino acid sequence of the heavy and/or light chain variable domains may be inspected to identify the sequences of the complementarity determining regions (CDRs) by methods that are well know in the art, e.g., by comparison to known amino acid sequences of other heavy and light chain variable regions to determine the regions of sequence hypervariability. Using routine recombinant DNA techniques, one or more of the CDRs may be inserted within framework regions, e.g., into human framework regions to humanize a non-human antibody, as described *supra*. The framework regions may be naturally occurring or consensus framework regions, and preferably human framework regions (see, e.g., Chothia et al., J. Mol. Biol. 278: 457-479 (1998) for a listing of human framework regions). Preferably, the polynucleotide generated by the combination of the framework regions and CDRs encodes an antibody that specifically binds a polypeptide of the invention. Preferably, as discussed *supra*, one or more amino acid substitutions may be made within the framework regions, and, preferably, the amino acid substitutions improve binding of the antibody to its antigen. Additionally, such methods may be used to make amino acid substitutions or deletions of one or more variable region cysteine residues participating in an intrachain disulfide bond to generate antibody molecules lacking one or more intrachain disulfide bonds. Other alterations to the polynucleotide are encompassed by the present invention and within the skill of the art.

[0216] In addition, techniques developed for the production of "chimeric antibodies" (Morrison et al., Proc. Natl. Acad. Sci. 81:851-855 (1984); Neuberger et al., Nature 312:604-608 (1984); Takeda et al., Nature 314:452-454 (1985)) by splicing genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. As described *supra*, a chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region, e.g., humanized antibodies.

[0217] Alternatively, techniques described for the production of single chain antibodies (U.S. Patent No. 4,946,778; Bird, Science 242:423- 42 (1988); Huston et al., Proc. Natl. Acad. Sci. USA 85:5879-5883 (1988); and Ward et al., Nature 334:544-54 (1989)) can be adapted to produce single chain antibodies. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide. Techniques for the assembly of functional Fv fragments in *E. coli* may also be used (Skerra et al., Science 242:1038- 1041 (1988)).

Methods of Producing Antibodies

[0218] The antibodies of the invention can be produced by any method known in the art for the synthesis of antibodies, in particular, by chemical synthesis or preferably, by recombinant expression techniques. Methods of producing antibodies include, but are not limited to, hybridoma technology, EBV transformation, and other methods discussed herein as well as through the use recombinant DNA technology, as discussed below.

[0219] Recombinant expression of an antibody of the invention, or fragment, derivative or analog thereof, (e.g., a heavy or light chain of an antibody of the invention or a single chain antibody of the invention), requires construction of an expression vector containing a polynucleotide that encodes the antibody. Once a polynucleotide encoding an antibody molecule or a heavy or light chain of an antibody, or portion thereof (preferably containing the heavy or light chain variable domain), of the invention has been obtained, the vector for the production of the antibody molecule may be produced by recombinant DNA technology using techniques well known in the art. Thus, methods for preparing a protein by expressing a polynucleotide containing an antibody encoding nucleotide sequence are described herein. Methods which are well known to those skilled in the art can be used to construct expression vectors containing antibody coding sequences and appropriate transcriptional and translational control signals. These methods include, for example, *in vitro* recombinant DNA techniques, synthetic techniques, and *in vivo* genetic recombination. The invention, thus, provides replicable vectors comprising a nucleotide sequence encoding an antibody molecule of the invention, or a heavy or light chain thereof, or a heavy or light chain variable domain, operably linked to a promoter. Such vectors may include the nucleotide sequence encoding the constant region of the

antibody molecule (see, e.g., PCT Publication WO 86/05807; PCT Publication WO 89/01036; and U.S. Patent No. 5,122,464) and the variable domain of the antibody may be cloned into such a vector for expression of the entire heavy or light chain.

[0220] The expression vector is transferred to a host cell by conventional techniques and the transfected cells are then cultured by conventional techniques to produce an antibody of the invention. Thus, the invention includes host cells containing a polynucleotide encoding an antibody of the invention, or a heavy or light chain thereof, or a single chain antibody of the invention, operably linked to a heterologous promoter. In preferred embodiments for the expression of double-chained antibodies, vectors encoding both the heavy and light chains may be co-expressed in the host cell for expression of the entire immunoglobulin molecule, as detailed below.

[0221] A variety of host-expression vector systems may be utilized to express the antibody molecules of the invention. Such host-expression systems represent vehicles by which the coding sequences of interest may be produced and subsequently purified, but also represent cells which may, when transformed or transfected with the appropriate nucleotide coding sequences, express an antibody molecule of the invention in situ. These include but are not limited to microorganisms such as bacteria (e.g., E. coli, B. subtilis) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing antibody coding sequences; yeast (e.g., Saccharomyces, Pichia) transformed with recombinant yeast expression vectors containing antibody coding sequences; insect cell systems infected with recombinant virus expression vectors (e.g., baculovirus) containing antibody coding sequences; plant cell systems infected with recombinant virus expression vectors (e.g., cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (e.g., Ti plasmid) containing antibody coding sequences; or mammalian cell systems (e.g., COS, CHO, BHK, 293, 3T3 cells) harboring recombinant expression constructs containing promoters derived from the genome of mammalian cells (e.g., metallothionein promoter) or from mammalian viruses (e.g., the adenovirus late promoter; the vaccinia virus 7.5K promoter). Preferably, bacterial cells such as Escherichia coli, and more preferably, eukaryotic cells, especially for the expression of whole recombinant antibody molecule, are used for the expression of a recombinant antibody molecule. For example,

mammalian cells such as Chinese hamster ovary cells (CHO), in conjunction with a vector such as the major intermediate early gene promoter element from human cytomegalovirus is an effective expression system for antibodies (Foecking et al., Gene 45:101 (1986); Cockett et al., Bio/Technology 8:2 (1990)).

[0222] In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the antibody molecule being expressed. For example, when a large quantity of such a protein is to be produced, for the generation of pharmaceutical compositions of an antibody molecule, vectors which direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the E. coli expression vector pUR278 (Ruther et al., EMBO J. 2:1791 (1983)), in which the antibody coding sequence may be ligated individually into the vector in frame with the lac Z coding region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, Nucleic Acids Res. 13:3101-3109 (1985); Van Heeke & Schuster, J. Biol. Chem. 24:5503-5509 (1989)); and the like. pGEX vectors may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption and binding to matrix glutathione-agarose beads followed by elution in the presence of free glutathione. The pGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

[0223] In an insect system, Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes. The virus grows in *Spodoptera frugiperda* cells. The antibody coding sequence may be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter).

[0224] In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the antibody coding sequence of interest may be ligated to an adenovirus transcription/translation control complex, e.g., the late promoter and tripartite leader sequence. This chimeric gene may then be inserted in the adenovirus genome by *in vitro* or *in vivo* recombination. Insertion in a non- essential region of the viral genome (e.g., region E1 or E3) will result

in a recombinant virus that is viable and capable of expressing the antibody molecule in infected hosts. (e.g., see Logan & Shenk, Proc. Natl. Acad. Sci. USA 81:355-359 (1984)). Specific initiation signals may also be required for efficient translation of inserted antibody coding sequences. These signals include the ATG initiation codon and adjacent sequences. Furthermore, the initiation codon must be in phase with the reading frame of the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate transcription enhancer elements, transcription terminators, etc. (see Bittner et al., Methods in Enzymol. 153:51-544 (1987)).

[0225] In addition, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Such modifications (e.g., glycosylation) and processing (e.g., cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which possess the cellular machinery for proper processing of the primary transcript, glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include but are not limited to CHO, VERY, BHK, Hela, COS, MDCK, 293, 3T3, WI38, and in particular, breast cancer cell lines such as, for example, BT483, Hs578T, HTB2, BT20 and T47D, and normal mammary gland cell line such as, for example, CRL7030 and Hs578Bst.

[0226] For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the antibody molecule may be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by appropriate expression control elements (e.g., promoter, enhancer, sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in

the recombinant plasmid confers resistance to the selection and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the antibody molecule. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that interact directly or indirectly with the antibody molecule.

[0227] A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler et al., Cell 11:223 (1977)), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, Proc. Natl. Acad. Sci. USA 48:202 (1992)), and adenine phosphoribosyltransferase (Lowy et al., Cell 22:817 (1980)) genes can be employed in tk-, hgprt- or aprt- cells, respectively. Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler et al., Natl. Acad. Sci. USA 77:357 (1980); O'Hare et al., Proc. Natl. Acad. Sci. USA 78:1527 (1981)); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, Proc. Natl. Acad. Sci. USA 78:2072 (1981)); neo, which confers resistance to the aminoglycoside G-418 Clinical Pharmacy 12:488-505; Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); TIB TECH 11(5):155-215 (1993)); and hygro, which confers resistance to hygromycin (Santerre et al., Gene 30:147 (1984)). Methods commonly known in the art of recombinant DNA technology may be routinely applied to select the desired recombinant clone, and such methods are described, for example, in Ausubel et al. (eds.), Current Protocols in Molecular Biology, John Wiley & Sons, NY (1993); Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press, NY (1990); and in Chapters 12 and 13, Dracopoli et al. (eds), Current Protocols in Human Genetics, John Wiley & Sons, NY (1994); Colberre-Garapin et al., J. Mol. Biol. 150:1 (1981), which are incorporated by reference herein in their entireties.

[0228] The expression levels of an antibody molecule can be increased by vector amplification (for a review, see Bebbington and Hentschel, The use of vectors based on gene amplification for the expression of cloned genes in mammalian cells in DNA

cloning, Vol.3. (Academic Press, New York, 1987)). When a marker in the vector system expressing antibody is amplifiable, increase in the level of inhibitor present in culture of host cell will increase the number of copies of the marker gene. Since the amplified region is associated with the antibody gene, production of the antibody will also increase (Crouse et al., Mol. Cell. Biol. 3:257 (1983)).

[0229] Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be amplified in the presence of the drugs methionine sulphoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors are the availabilty of cell lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g., Chinese Hamster Ovary (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene. A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657 which are incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors that may be used according to the present invention are commercially available from suplliers, including, for example Lonza Biologics, Inc. (Portsmouth, NH). Expression and production of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington et al., Bio/technology 10:169(1992) and in Biblia and Robinson Biotechnol. Prog. 11:1 (1995) which are incorporated in their entirities by reference herein.

[0230] The host cell may be co-transfected with two expression vectors of the invention, the first vector encoding a heavy chain derived polypeptide and the second vector encoding a light chain derived polypeptide. The two vectors may contain identical selectable markers which enable equal expression of heavy and light chain polypeptides. Alternatively, a single vector may be used which encodes, and is capable of expressing, both heavy and light chain polypeptides. In such situations, the light chain should be placed before the heavy chain to avoid an excess of toxic free heavy chain (Proudfoot, Nature 322:52 (1986); Kohler, Proc. Natl. Acad. Sci. USA 77:2197 (1980)). The coding sequences for the heavy and light chains may comprise cDNA or genomic DNA.

[0231] Once an antibody molecule of the invention has been produced by an animal, chemically synthesized, or recombinantly expressed, it may be purified by any method known in the art for purification of an immunoglobulin molecule, for example, by chromatography (e.g., ion exchange, affinity, particularly by affinity for the specific antigen after Protein A, and sizing column chromatography), centrifugation, differential solubility, or by any other standard technique for the purification of proteins. In addition, the antibodies of the present invention or fragments thereof can be fused to heterologous polypeptide sequences described herein or otherwise known in the art, to facilitate purification.

[0232] The present invention encompasses antibodies recombinantly fused or chemically conjugated (including both covalently and non-covalently conjugations) to a polypeptide (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention to generate fusion proteins. The fusion does not necessarily need to be direct, but may occur through linker sequences. The antibodies may be specific for antigens other than polypeptides (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention. For example, antibodies may be used to target the polypeptides of the present invention to particular cell types, either *in vitro* or *in vivo*, by fusing or conjugating the polypeptides of the present invention to antibodies specific for particular cell surface receptors. Antibodies fused or conjugated to the polypeptides of the present invention may also be used in *in vitro* immunoassays and purification methods using methods known in the art. See e.g., Harbor et al., *supra*, and PCT publication WO 93/21232; EP 439,095; Naramura et al., Immunol. Lett. 39:91-99 (1994); U.S. Patent 5,474,981; Gillies et al., PNAS 89:1428-1432 (1992); Fell et al., J. Immunol. 146:2446-2452 (1991), which are incorporated by reference in their entireties.

[0233] The present invention further includes compositions comprising the polypeptides of the present invention fused or conjugated to antibody domains other than the variable regions. For example, the polypeptides of the present invention may be fused or conjugated to an antibody Fc region, or portion thereof. The antibody portion fused to a polypeptide of the present invention may comprise the constant region, hinge region, CH1 domain, CH2 domain, and CH3 domain or any combination of whole domains or

portions thereof. The polypeptides may also be fused or conjugated to the above antibody portions to form multimers. For example, Fc portions fused to the polypeptides of the present invention can form dimers through disulfide bonding between the Fc portions. Higher multimeric forms can be made by fusing the polypeptides to portions of IgA and IgM. Methods for fusing or conjugating the polypeptides of the present invention to antibody portions are known in the art. See, e.g., U.S. Patent Nos. 5,336,603; 5,622,929; 5,359,046; 5,349,053; 5,447,851; 5,112,946; EP 307,434; EP 367,166; PCT publications WO 96/04388; WO 91/06570; Ashkenazi et al., Proc. Natl. Acad. Sci. USA 88:10535-10539 (1991); Zheng et al., J. Immunol. 154:5590-5600 (1995); and Vil et al., Proc. Natl. Acad. Sci. USA 89:11337- 11341 (1992) (said references incorporated by reference in their entireties).

[0234] As discussed, *supra*, the polypeptides corresponding to a polypeptide, polypeptide fragment, or a variant of SEQ ID NO:Y may be fused or conjugated to the above antibody portions to increase the *in vivo* half life of the polypeptides or for use in immunoassays using methods known in the art. Further, the polypeptides corresponding to SEQ ID NO:Y may be fused or conjugated to the above antibody portions to facilitate purification. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See EP 394,827; Traunecker et al., Nature 331:84-86 (1988). The polypeptides of the present invention fused or conjugated to an antibody having disulfide- linked dimeric structures (due to the IgG) may also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. See, for example, Fountoulakis et al., J. Biochem. 270:3958-3964 (1995). In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. See, for example, EP A 232,262. Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, Bennett et al., J.

Molecular Recognition 8:52-58 (1995); Johanson et al., J. Biol. Chem. 270:9459-9471 (1995)).

[0235] Moreover, the antibodies or fragments thereof of the present invention can be fused to marker sequences, such as a peptide to facilitate purification. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Other peptide tags useful for purification include, but are not limited to, the "HA" tag, which corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984)) and the "flag" tag.

[0236] The present invention further encompasses antibodies or fragments thereof conjugated to a diagnostic or therapeutic agent. The antibodies can be used diagnostically to, for example, monitor the development or progression of a tumor as part of a clinical testing procedure to, e.g., determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials, radioactive materials, positron emitting metals using various positron emission tomographies, and nonradioactive paramagnetic metal ions. The detectable substance may be coupled or conjugated either directly to the antibody (or fragment thereof) or indirectly, through an intermediate (such as, for example, a linker known in the art) using techniques known in the art. See, for example, U.S. Patent No. 4,741,900 for metal ions which can be conjugated to antibodies for use as diagnostics according to the present invention.

[0237] Further, an antibody or fragment thereof may be conjugated to a therapeutic moiety such as a cytotoxin, e.g., a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, 213Bi. A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin,

dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclothosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis- dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

[0238] The conjugates of the invention can be used for modifying a given biological response, the therapeutic agent or drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor, a-interferon, ß-interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator, an apoptotic agent, e.g., TNF-alpha, TNF-beta, AIM I (See, International Publication No. WO 97/33899), AIM II (See, International Publication No. WO 97/34911), Fas Ligand (Takahashi *et al., Int. Immunol., 6*:1567-1574 (1994)), VEGI (See, International Publication No. WO 99/23105), a thrombotic agent or an anti- angiogenic agent, e.g., angiostatin or endostatin; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

[0239] Antibodies may also be attached to solid supports, which are particularly useful for immunoassays or purification of the target antigen. Such solid supports include, but are not limited to, glass, cellulose, polyacrylamide, nylon, polystyrene, polyvinyl chloride or polypropylene.

[0240] Techniques for conjugating such therapeutic moiety to antibodies are well known. See, for example., Arnon et al., "Monoclonal Antibodies For Immunotargeting Of

Drugs In Cancer Therapy", in Monoclonal Antibodies And Cancer Therapy, Reisfeld et al. (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom et al., "Antibodies For Drug Delivery", in Controlled Drug Delivery (2nd Ed.), Robinson et al. (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in Monoclonal Antibodies '84: Biological And Clinical Applications, Pinchera et al. (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in Monoclonal Antibodies For Cancer Detection And Therapy, Baldwin et al. (eds.), pp. 303-16 (Academic Press 1985), and Thorpe et al., "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", Immunol. Rev. 62:119-58 (1982).

[0241] Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980, which is incorporated herein by reference in its entirety.

[0242] An antibody, with or without a therapeutic moiety conjugated to it, administered alone or in combination with cytotoxic factor(s) and/or cytokine(s) can be used as a therapeutic.

Immunophenotyping

[0243] The antibodies of the invention may be utilized for immunophenotyping of cell lines and biological samples. Translation products of the genes of the present invention may be useful as cell specific markers, or more specifically as cellular markers that are differentially expressed at various stages of differentiation and/or maturation of particular cell types. Monoclonal antibodies directed against a specific epitope, or combination of epitopes, will allow for the screening of cellular populations expressing the marker. Various techniques can be utilized using monoclonal antibodies to screen for cellular populations expressing the marker(s), and include magnetic separation using antibody-coated magnetic beads, "panning" with antibody attached to a solid matrix (i.e., plate), and flow cytometry (See, e.g., U.S. Patent 5,985,660; and Morrison et al., Cell, 96:737-49 (1999)).

[0244] These techniques allow for the screening of particular populations of cells, such as might be found with hematological malignancies (i.e. minimal residual disease

(MRD) in acute leukemic patients) and "non-self" cells in transplantations to prevent Graft-versus-Host Disease (GVHD). Alternatively, these techniques allow for the screening of hematopoietic stem and progenitor cells capable of undergoing proliferation and/or differentiation, as might be found in human umbilical cord blood.

Assays For Antibody Binding

[0245] The antibodies of the invention may be assayed for immunospecific binding by any method known in the art. The immunoassays which can be used include but are not limited to competitive and non-competitive assay systems using techniques such as western blots, radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoprecipitation assays, precipitin reactions, gel diffusion precipitin reactions, immunodiffusion assays, agglutination assays, complement-fixation assays, immunoradiometric assays, fluorescent immunoassays, and protein A immunoassays, to name but a few. Such assays are routine and well known in the art (see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, which is incorporated by reference herein in its entirety). Exemplary immunoassays are described briefly below (but are not intended by way of limitation).

[0246] Immunoprecipitation protocols generally comprise lysing a population of cells in a lysis buffer such as RIPA buffer (1% NP-40 or Triton X- 100, 1% sodium deoxycholate, 0.1% SDS, 0.15 M NaCl, 0.01 M sodium phosphate at pH 7.2, 1% Trasylol) supplemented with protein phosphatase and/or protease inhibitors (e.g., EDTA, PMSF, aprotinin, sodium vanadate), adding the antibody of interest to the cell lysate, incubating for a period of time (e.g., 1-4 hours) at 4° C, adding protein A and/or protein G sepharose beads to the cell lysate, incubating for about an hour or more at 4° C, washing the beads in lysis buffer and resuspending the beads in SDS/sample buffer. The ability of the antibody of interest to immunoprecipitate a particular antigen can be assessed by, e.g., western blot analysis. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the binding of the antibody to an antigen and decrease the background (e.g., pre-clearing the cell lysate with sepharose beads). For further discussion regarding immunoprecipitation protocols see, e.g., Ausubel et al., eds., (1994),

Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 10.16.1.

[0247] Western blot analysis generally comprises preparing protein samples, electrophoresis of the protein samples in a polyacrylamide gel (e.g., 8%- 20% SDS-PAGE depending on the molecular weight of the antigen), transferring the protein sample from the polyacrylamide gel to a membrane such as nitrocellulose, PVDF or nylon, blocking the membrane in blocking solution (e.g., PBS with 3% BSA or non-fat milk), washing the membrane in washing buffer (e.g., PBS-Tween 20), blocking the membrane with primary antibody (the antibody of interest) diluted in blocking buffer, washing the membrane in washing buffer, blocking the membrane with a secondary antibody (which recognizes the primary antibody, e.g., an anti-human antibody) conjugated to an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) or radioactive molecule (e.g., 32P or 125I) diluted in blocking buffer, washing the membrane in wash buffer, and detecting the presence of the antigen. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected and to reduce the background noise. For further discussion regarding western blot protocols see, e.g., Ausubel et al., eds., (1994), Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 10.8.1.

[0248] ELISAs comprise preparing antigen, coating the well of a 96 well microtiter plate with the antigen, adding the antibody of interest conjugated to a detectable compound such as an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) to the well and incubating for a period of time, and detecting the presence of the antigen. In ELISAs the antibody of interest does not have to be conjugated to a detectable compound; instead, a second antibody (which recognizes the antibody of interest) conjugated to a detectable compound may be added to the well. Further, instead of coating the well with the antigen, the antibody may be coated to the well. In this case, a second antibody conjugated to a detectable compound may be added following the addition of the antigen of interest to the coated well. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected as well as other variations of ELISAs known in the art. For further discussion

regarding ELISAs see, e.g., Ausubel et al., eds., (1994), Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 11.2.1.

[0249] The binding affinity of an antibody to an antigen and the off-rate of an antibody-antigen interaction can be determined by competitive binding assays. One example of a competitive binding assay is a radioimmunoassay comprising the incubation of labeled antigen (e.g., 3H or 125I) with the antibody of interest in the presence of increasing amounts of unlabeled antigen, and the detection of the antibody bound to the labeled antigen. The affinity of the antibody of interest for a particular antigen and the binding off-rates can be determined from the data by scatchard plot analysis. Competition with a second antibody can also be determined using radioimmunoassays. In this case, the antigen is incubated with antibody of interest conjugated to a labeled compound (e.g., 3H or 125I) in the presence of increasing amounts of an unlabeled second antibody.

[0250] Antibodies of the invention may be characterized using immunocytochemisty methods on cells (e.g., mammalian cells, such as CHO cells) transfected with a vector enabling the expression of an ovarian antigen or with vector alone using techniques commonly known in the art. Antibodies that bind ovarian antigen transfected cells, but not vector-only transfected cells, are ovarian antigen specific.

Therapeutic Uses

[0251] The present invention is further directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the disclosed diseases, disorders, or conditions. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions described herein. The treatment and/or prevention of diseases, disorders, or conditions associated with aberrant expression and/or activity of a

polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0252] In a specific and preferred embodiment, the present invention is directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the diseases, disorders, or conditions of the ovarian and/or breast, including, but not limited to, neoplastic disorders (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below), and as described under "Reproductive System Disorders" below. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (e.g., antibodies directed to the full length protein expressed on the cell surface of a mammalian cell; antibodies directed to an epitope of an ovarian associated polypeptide of the invention (such as, a linear epitope (shown in Table 1, column 6) or a conformational epitope), including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to treat, inhibit or prevent diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, any one or more of the diseases, disorders, or conditions of the ovaries and/or breast described herein. The treatment and/or prevention of diseases, disorders, or conditions of the ovaries and/or breast associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0253] A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the

present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

[0254] The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors (such as, e.g., IL-2, IL-3 and IL-7), for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

[0255] The antibodies of the invention may be administered alone or in combination with other types of treatments (e.g., radiation therapy, chemotherapy, hormonal therapy, immunotherapy and anti-tumor agents). Generally, administration of products of a species origin or species reactivity (in the case of antibodies) that is the same species as that of the patient is preferred. Thus, in a preferred embodiment, human antibodies, fragments derivatives, analogs, or nucleic acids, are administered to a human patient for therapy or prophylaxis.

[0256] It is preferred to use high affinity and/or potent *in vivo* inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides of the invention, including fragments thereof. Preferred binding affinities include those with a dissociation constant or Kd less than 5×10^{-2} M, 10^{-2} M, 5×10^{-3} M, 10^{-3} M, 5×10^{-4} M, 10^{-4} M, 5×10^{-5} M, 10^{-5} M, 5×10^{-6} M, 10^{-6} M, 5×10^{-7} M, 10^{-7} M, 5×10^{-8} M, 10^{-8} M, 5×10^{-9} M, 10^{-9} M, 5×10^{-10} M, 10^{-10} M, 5×10^{-11} M, 10^{-11} M, 5×10^{-12} M, 10^{-12} M, 5×10^{-13} M, 10^{-13} M, 5×10^{-14} M, 10^{-14} M, 5×10^{-15} M, and 10^{-15} M.

Gene Therapy

[0257] In a specific embodiment, nucleic acids comprising sequences encoding antibodies or functional derivatives thereof, are administered to treat, inhibit or prevent a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention, by way of gene therapy. Gene therapy refers to therapy performed by the administration to a subject of an expressed or expressible nucleic acid. In this embodiment of the invention, the nucleic acids produce their encoded protein that mediates a therapeutic effect.

[0258] Any of the methods for gene therapy available in the art can be used according to the present invention. Exemplary methods are described below.

[0259] For general reviews of the methods of gene therapy, see Goldspiel et al., Clinical Pharmacy 12:488-505 (1993); Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); May, TIBTECH 11(5):155-215 (1993). Methods commonly known in the art of recombinant DNA technology which can be used are described in Ausubel et al. (eds.), Current Protocols in Molecular Biology, John Wiley & Sons, NY (1993); and Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press, NY (1990).

[0260] In a preferred embodiment, the compound comprises nucleic acid sequences encoding an antibody, said nucleic acid sequences being part of expression vectors that express the antibody or fragments or chimeric proteins or heavy or light chains thereof in a suitable host. In particular, such nucleic acid sequences have promoters operably linked to the antibody coding region, said promoter being inducible or constitutive, and, optionally, tissue-specific. In another particular embodiment, nucleic acid molecules are used in which the antibody coding sequences and any other desired sequences are flanked by regions that promote homologous recombination at a desired site in the genome, thus providing for intrachromosomal expression of the antibody encoding nucleic acids (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989). In specific embodiments, the expressed antibody molecule is a single chain antibody; alternatively, the nucleic acid sequences include sequences encoding both the heavy and light chains, or fragments thereof, of the antibody.

[0261] Delivery of the nucleic acids into a patient may be either direct, in which case the patient is directly exposed to the nucleic acid or nucleic acid- carrying vectors, or indirect, in which case, cells are first transformed with the nucleic acids *in vitro*, then transplanted into the patient. These two approaches are known, respectively, as *in vivo* or ex vivo gene therapy.

[0262] In a specific embodiment, the nucleic acid sequences are directly administered *in vivo*, where it is expressed to produce the encoded product. This can be accomplished by any of numerous methods known in the art, e.g., by constructing them as part of an appropriate nucleic acid expression vector and administering it so that they become intracellular, e.g., by infection using defective or attenuated retrovirals or other viral vectors (see U.S. Patent No. 4,980,286), or by direct injection of naked DNA, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, encapsulation in liposomes, microparticles, or microcapsules, or by administering them in linkage to a peptide which is known to enter the nucleus, by administering it in linkage to a ligand subject to receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)) (which can be used to target cell types specifically expressing the receptors), etc. In another embodiment, nucleic acid-ligand complexes can be formed in which the ligand comprises a fusogenic viral peptide to disrupt endosomes, allowing the nucleic acid to avoid lysosomal degradation. In yet another embodiment, the nucleic acid can be targeted *in vivo* for cell specific uptake and expression, by targeting a specific receptor (see, e.g., PCT Publications WO 92/06180; WO 92/22635; WO92/20316; WO93/14188, WO 93/20221). Alternatively, the nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989)).

[0263] In a specific embodiment, viral vectors that contains nucleic acid sequences encoding an antibody of the invention are used. For example, a retroviral vector can be used (see Miller et al., Meth. Enzymol. 217:581-599 (1993)). These retroviral vectors contain the components necessary for the correct packaging of the viral genome and integration into the host cell DNA. The nucleic acid sequences encoding the antibody to

be used in gene therapy are cloned into one or more vectors, which facilitates delivery of the gene into a patient. More detail about retroviral vectors can be found in Boesen et al., Biotherapy 6:291-302 (1994), which describes the use of a retroviral vector to deliver the mdr1 gene to hematopoietic stem cells in order to make the stem cells more resistant to chemotherapy. Other references illustrating the use of retroviral vectors in gene therapy are: Clowes et al., J. Clin. Invest. 93:644-651 (1994); Kiem et al., Blood 83:1467-1473 (1994); Salmons and Gunzberg, Human Gene Therapy 4:129-141 (1993); and Grossman and Wilson, Curr. Opin. in Genetics and Devel. 3:110-114 (1993).

[0264] Adenoviruses are other viral vectors that can be used in gene therapy. Adenoviruses are especially attractive vehicles for delivering genes to respiratory epithelia. Adenoviruses naturally infect respiratory epithelia where they cause a mild disease. Other targets for adenovirus-based delivery systems are liver, the central nervous system, endothelial cells, and muscle. Adenoviruses have the advantage of being capable of infecting non-dividing cells. Kozarsky and Wilson, Current Opinion in Genetics and Development 3:499-503 (1993) present a review of adenovirus-based gene therapy. Bout et al., Human Gene Therapy 5:3-10 (1994) demonstrated the use of adenovirus vectors to transfer genes to the respiratory epithelia of rhesus monkeys. Other instances of the use of adenoviruses in gene therapy can be found in Rosenfeld et al., Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143- 155 (1992); Mastrangeli et al., J. Clin. Invest. 91:225-234 (1993); PCT Publication WO94/12649; and Wang, et al., Gene Therapy 2:775-783 (1995). In a preferred embodiment, adenovirus vectors are used.

[0265] Adeno-associated virus (AAV) has also been proposed for use in gene therapy (Walsh et al., Proc. Soc. Exp. Biol. Med. 204:289-300 (1993); U.S. Patent No. 5,436,146).

[0266] Another approach to gene therapy involves transferring a gene to cells in tissue culture by such methods as electroporation, lipofection, calcium phosphate mediated transfection, or viral infection. Usually, the method of transfer includes the transfer of a selectable marker to the cells. The cells are then placed under selection to isolate those cells that have taken up and are expressing the transferred gene. Those cells are then delivered to a patient.

[0267] In this embodiment, the nucleic acid is introduced into a cell prior to administration *in vivo* of the resulting recombinant cell. Such introduction can be carried out by any method known in the art, including but not limited to transfection, electroporation, microinjection, infection with a viral or bacteriophage vector containing the nucleic acid sequences, cell fusion, chromosome-mediated gene transfer, microcell-mediated gene transfer, spheroplast fusion, etc. Numerous techniques are known in the art for the introduction of foreign genes into cells (see, e.g., Loeffler and Behr, Meth. Enzymol. 217:599-618 (1993); Cohen et al., Meth. Enzymol. 217:618-644 (1993); Cline, Pharmac. Ther. 29:69-92m (1985) and may be used in accordance with the present invention, provided that the necessary developmental and physiological functions of the recipient cells are not disrupted. The technique should provide for the stable transfer of the nucleic acid to the cell, so that the nucleic acid is expressible by the cell and preferably heritable and expressible by its cell progeny.

[0268] The resulting recombinant cells can be delivered to a patient by various methods known in the art. Recombinant blood cells (e.g., hematopoietic stem or progenitor cells) are preferably administered intravenously. The amount of cells envisioned for use depends on the desired effect, patient state, etc., and can be determined by one skilled in the art.

[0269] Cells into which a nucleic acid can be introduced for purposes of gene therapy encompass any desired, available cell type, and include but are not limited to epithelial cells, endothelial cells, keratinocytes, fibroblasts, muscle cells, hepatocytes; blood cells such as T lymphocytes, B lymphocytes, monocytes, macrophages, neutrophils, eosinophils, megakaryocytes, granulocytes; various stem or progenitor cells, in particular hematopoietic stem or progenitor cells, e.g., as obtained from bone marrow, umbilical cord blood, peripheral blood, fetal liver, etc.

[0270] In a preferred embodiment, the cell used for gene therapy is autologous to the patient.

[0271] In an embodiment in which recombinant cells are used in gene therapy, nucleic acid sequences encoding an antibody are introduced into the cells such that they are expressible by the cells or their progeny, and the recombinant cells are then administered *in vivo* for therapeutic effect. In a specific embodiment, stem or progenitor

cells are used. Any stem and/or progenitor cells which can be isolated and maintained *in vitro* can potentially be used in accordance with this embodiment of the present invention (see e.g. PCT Publication WO 94/08598; Stemple and Anderson, Cell 71:973-985 (1992); Rheinwald, Meth. Cell Bio. 21A:229 (1980); and Pittelkow and Scott, Mayo Clinic Proc. 61:771 (1986)).

[0272] In a specific embodiment, the nucleic acid to be introduced for purposes of gene therapy comprises an inducible promoter operably linked to the coding region, such that expression of the nucleic acid is controllable by the presence or absence of an appropriate inducer of transcription.

Demonstration of Therapeutic or Prophylactic Activity

[0273] The compounds or pharmaceutical compositions of the invention are preferably tested *in vitro*, and then *in vivo* for the desired therapeutic or prophylactic activity, prior to use in humans. For example, *in vitro* assays to demonstrate the therapeutic or prophylactic utility of a compound or pharmaceutical composition include, the effect of a compound on a cell line or a patient tissue sample. The effect of the compound or composition on the cell line and/or tissue sample can be determined utilizing techniques known to those of skill in the art including, but not limited to, rosette formation assays and cell lysis assays. In accordance with the invention, *in vitro* assays which can be used to determine whether administration of a specific compound is indicated, include *in vitro* cell culture assays in which a patient tissue sample is grown in culture, and exposed to or otherwise administered a compound, and the effect of such compound upon the tissue sample is observed.

Therapeutic/Prophylactic Administration and Composition

[0274] The invention provides methods of treatment, inhibition and prophylaxis by administration to a subject of an effective amount of a compound or pharmaceutical composition of the invention, preferably a polypeptide or antibody of the invention. In a preferred embodiment, the compound is substantially purified (e.g., substantially free from substances that limit its effect or produce undesired side-effects). The subject is

preferably an animal, including but not limited to animals such as cows, pigs, horses, chickens, cats, dogs, etc., and is preferably a mammal, and most preferably human.

[0275] Formulations and methods of administration that can be employed when the compound comprises a nucleic acid or an immunoglobulin are described above; additional appropriate formulations and routes of administration can be selected from among those described herein below.

[0276] Various delivery systems are known and can be used to administer a compound of the invention, e.g., encapsulation in liposomes, microparticles, microcapsules, recombinant cells capable of expressing the compound, receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)), construction of a nucleic acid as part of a retroviral or other vector, etc. Methods of introduction include but are not limited to intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, and oral routes. The compounds or compositions may be administered by any convenient route, for example by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral mucosa, rectal and intestinal mucosa, etc.) and may be administered together with other biologically active agents. Administration can be systemic or local. In addition, it may be desirable to introduce the pharmaceutical compounds or compositions of the invention into the central nervous system by any suitable route, including intraventricular and intrathecal injection; intraventricular injection may be facilitated by an intraventricular catheter, for example, attached to a reservoir, such as an Ommaya reservoir. Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent.

[0277] In a specific embodiment, it may be desirable to administer the pharmaceutical compounds or compositions of the invention locally to the area in need of treatment; this may be achieved by, for example, and not by way of limitation, local infusion during surgery, topical application, e.g., in conjunction with a wound dressing after surgery, by injection, by means of a catheter, by means of a suppository, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers. Preferably, when

administering a protein, including an antibody, of the invention, care must be taken to use materials to which the protein does not absorb.

[0278] In another embodiment, the compound or composition can be delivered in a vesicle, in particular a liposome (see Langer, Science 249:1527-1533 (1990); Treat et al., in Liposomes in the Therapy of Infectious Disease and Cancer, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 353- 365 (1989); Lopez-Berestein, ibid., pp. 317-327; see generally ibid.)

[0279] In yet another embodiment, the compound or composition can be delivered in a controlled release system. In one embodiment, a pump may be used (see Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)). In another embodiment, polymeric materials can be used (see Medical Applications of Controlled Release, Langer and Wise (eds.), CRC Pres., Boca Raton, Florida (1974); Controlled Drug Bioavailability, Drug Product Design and Performance, Smolen and Ball (eds.), Wiley, New York (1984); Ranger and Peppas, J., Macromol. Sci. Rev. Macromol. Chem. 23:61 (1983); see also Levy et al., Science 228:190 (1985); During et al., Ann. Neurol. 25:351 (1989); Howard et al., J.Neurosurg. 71:105 (1989)). In yet another embodiment, a controlled release system can be placed in proximity of the therapeutic target, e.g., the brain, thus requiring only a fraction of the systemic dose (see, e.g., Goodson, in Medical Applications of Controlled Release, *supra*, vol. 2, pp. 115-138 (1984)).

[0280] Other controlled release systems are discussed in the review by Langer (Science 249:1527-1533 (1990)).

[0281] In a specific embodiment where the compound of the invention is a nucleic acid encoding a protein, the nucleic acid can be administered *in vivo* to promote expression of its encoded protein, by constructing it as part of an appropriate nucleic acid expression vector and administering it so that it becomes intracellular, e.g., by use of a retroviral vector (see U.S. Patent No. 4,980,286), or by direct injection, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, or by administering it in linkage to a homeobox- like peptide which is known to enter the nucleus (see e.g., Joliot et al., Proc. Natl. Acad. Sci. USA 88:1864-1868 (1991)), etc. Alternatively, a nucleic acid can be

introduced intracellularly and incorporated within host cell DNA for expression, by homologous recombination.

[0282] The present invention also provides pharmaceutical compositions. Such compositions comprise a therapeutically effective amount of a compound, and a pharmaceutically acceptable carrier. In a specific embodiment, the term "pharmaceutically acceptable" means approved by a regulatory agency of the Federal or a state government or listed in the U.S. Pharmacopeia or other generally recognized pharmacopeia for use in animals, and more particularly in humans. The term "carrier" refers to a diluent, adjuvant, excipient, or vehicle with which the therapeutic is administered. Such pharmaceutical carriers can be sterile liquids, such as water and oils, including those of petroleum, animal, vegetable or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. Water is a preferred carrier when the pharmaceutical composition is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as liquid carriers, particularly for injectable solutions. Suitable pharmaceutical excipients include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride, dried skim milk, glycerol, propylene, glycol, water, ethanol and the like. The composition, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH buffering agents. These compositions can take the form of solutions, suspensions, emulsion, tablets, pills, capsules, powders, sustained-release formulations and the like. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium stearate, sodium saccharine, cellulose, magnesium carbonate, etc. Examples of suitable pharmaceutical carriers are described in "Remington's Pharmaceutical Sciences" by E.W. Martin. Such compositions will contain a therapeutically effective amount of the compound, preferably in purified form, together with a suitable amount of carrier so as to provide the form for proper administration to the patient. The formulation should suit the mode of administration.

[0283] In a preferred embodiment, the composition is formulated in accordance with routine procedures as a pharmaceutical composition adapted for intravenous

administration to human beings. Typically, compositions for intravenous administration are solutions in sterile isotonic aqueous buffer. Where necessary, the composition may also include a solubilizing agent and a local anesthetic such as lignocaine to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampoule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the composition is administered by injection, an ampoule of sterile water for injection or saline can be provided so that the ingredients may be mixed prior to administration.

[0284] The compounds of the invention can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with anions such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with cations such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

[0285] The amount of the compound of the invention which will be effective in the treatment, inhibition and prevention of a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention can be determined by standard clinical techniques. In addition, in vitro assays may optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of the disease or disorder, and should be decided according to the judgment of the practitioner and each patient's circumstances. Effective doses may be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

[0286] For antibodies, the dosage administered to a patient is typically 0.1 mg/kg to 100 mg/kg of the patient's body weight. Preferably, the dosage administered to a patient is between 0.1 mg/kg and 20 mg/kg of the patient's body weight, more preferably 1 mg/kg to 10 mg/kg of the patient's body weight. Generally, human antibodies have a longer half-life within the human body than antibodies from other species due to the immune response to the foreign polypeptides. Thus, lower dosages of human antibodies

and less frequent administration is often possible. Further, the dosage and frequency of administration of antibodies of the invention may be reduced by enhancing uptake and tissue penetration (e.g., into the brain) of the antibodies by modifications such as, for example, lipidation.

[0287] The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration.

Diagnosis and Imaging

[0288] Labeled antibodies, and derivatives and analogs thereof, which specifically bind to a polypeptide of interest can be used for diagnostic purposes to detect, diagnose, or monitor diseases, disorders, and/or conditions associated with the aberrant expression and/or activity of a polypeptide of the invention. The invention provides for the detection of aberrant expression of a polypeptide of interest, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of aberrant expression.

[0289] The invention provides a diagnostic assay for diagnosing an ovarian and/or breast disorder, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of a particular disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of

actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

[0290] Antibodies of the invention can be used to assay protein levels in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen et al., J. Cell . Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine (125I, 121I), carbon (14C), sulfur (35S), tritium (3H), indium (112In), and technetium (99Tc); luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0291] One facet of the invention is the detection and diagnosis of a disease or disorder associated with aberrant expression of a polypeptide of interest in an animal, preferably a mammal and most preferably a human. A preferred embodiment of the invention is the detection and diagnosis of a disease or disorder of the ovarian associated with aberrant expression of an ovarian antigen in an animal, preferably a mammal and most preferably a human. In one embodiment, diagnosis comprises: a) administering (for example, parenterally, subcutaneously, or intraperitoneally) to a subject an effective amount of a labeled molecule which specifically binds to the polypeptide of interest; b) waiting for a time interval following the administering for permitting the labeled molecule to preferentially concentrate at sites in the subject where the polypeptide is expressed (and for unbound labeled molecule to be cleared to background level); c) determining background level; and d) detecting the labeled molecule in the subject, such that detection of labeled molecule above the background level indicates that the subject has a particular disease or disorder associated with aberrant expression of the polypeptide of interest. Background level can be determined by various methods including, comparing the amount of labeled molecule detected to a standard value previously determined for a particular system.

[0292] It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of 99mTc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the specific protein. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in Tumor Imaging: The Radiochemical Detection of Cancer, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

[0293] Depending on several variables, including the type of label used and the mode of administration, the time interval following the administration for permitting the labeled molecule to preferentially concentrate at sites in the subject and for unbound labeled molecule to be cleared to background level is 6 to 48 hours or 6 to 24 hours or 6 to 12 hours. In another embodiment the time interval following administration is 5 to 20 days or 5 to 10 days.

[0294] In an embodiment, the method for diagnosing the disease or disorder, for example, one month after initial diagnosis, six months after initial diagnosis, one year after initial diagnosis, etc.

[0295] Presence of the labeled molecule can be detected in the patient using methods known in the art for *in vivo* scanning. These methods depend upon the type of label used. Skilled artisans will be able to determine the appropriate method for detecting a particular label. Methods and devices that may be used in the diagnostic methods of the invention include, but are not limited to, computed tomography (CT), whole body scan such as position emission tomography (PET), magnetic resonance imaging (MRI), and sonography.

[0296] In a specific embodiment, the molecule is labeled with a radioisotope and is detected in the patient using a radiation responsive surgical instrument (Thurston et al., U.S. Patent No. 5,441,050). In another embodiment, the molecule is labeled with a fluorescent compound and is detected in the patient using a fluorescence responsive scanning instrument. In another embodiment, the molecule is labeled with a positron emitting metal and is detected in the patent using positron emission-tomography. In yet

another embodiment, the molecule is labeled with a paramagnetic label and is detected in a patient using magnetic resonance imaging (MRI).

Kits

[0297] The present invention provides kits that can be used in the above methods. In one embodiment, a kit comprises an antibody of the invention, preferably a purified antibody, in one or more containers. In a specific embodiment, the kits of the present invention contain a substantially isolated polypeptide comprising an epitope which is specifically immunoreactive with an antibody included in the kit. Preferably, the kits of the present invention further comprise a control antibody which does not react with the polypeptide of interest. In another specific embodiment, the kits of the present invention contain a means for detecting the binding of an antibody to a polypeptide of interest (e.g., the antibody may be conjugated to a detectable substrate such as a fluorescent compound, an enzymatic substrate, a radioactive compound or a luminescent compound, or a second antibody which recognizes the first antibody may be conjugated to a detectable substrate).

[0298] In another specific embodiment of the present invention, the kit is a diagnostic kit for use in screening serum containing antibodies specific against proliferative and/or cancerous polynucleotides and polypeptides. Such a kit may include a control antibody that does not react with the polypeptide of interest. Such a kit may include a substantially isolated polypeptide antigen comprising an epitope which is specifically immunoreactive with at least one anti-polypeptide antigen antibody. Further, such a kit includes means for detecting the binding of said antibody to the antigen (e.g., the antibody may be conjugated to a fluorescent compound such as fluorescein or rhodamine which can be detected by flow cytometry). In specific embodiments, the kit may include a recombinantly produced or chemically synthesized polypeptide antigen. The polypeptide antigen of the kit may also be attached to a solid support.

[0299] In a more specific embodiment the detecting means of the above-described kit includes a solid support to which said polypeptide antigen is attached. Such a kit may also include a non-attached reporter-labeled anti-human antibody. In this embodiment, binding of the antibody to the polypeptide antigen can be detected by binding of the said reporter-labeled antibody.

[0300] In an additional embodiment, the invention includes a diagnostic kit for use in screening serum containing antigens of the polypeptide of the invention. The diagnostic kit includes a substantially isolated antibody specifically immunoreactive with polypeptide or polynucleotide antigens, and means for detecting the binding of the polynucleotide or polypeptide antigen to the antibody. In one embodiment, the antibody is attached to a solid support. In a specific embodiment, the antibody may be a monoclonal antibody. The detecting means of the kit may include a second, labeled monoclonal antibody. Alternatively, or in addition, the detecting means may include a labeled, competing antigen.

[0301] In one diagnostic configuration, test serum is reacted with a solid phase reagent having a surface-bound antigen obtained by the methods of the present invention. After binding with specific antigen antibody to the reagent and removing unbound serum components by washing, the reagent is reacted with reporter-labeled anti-human antibody to bind reporter to the reagent in proportion to the amount of bound anti-antigen antibody on the solid support. The reagent is again washed to remove unbound labeled antibody, and the amount of reporter associated with the reagent is determined. Typically, the reporter is an enzyme which is detected by incubating the solid phase in the presence of a suitable fluorometric, luminescent or colorimetric substrate (Sigma, St. Louis, MO).

[0302] The solid surface reagent in the above assay is prepared by known techniques for attaching protein material to solid support material, such as polymeric beads, dip sticks, 96-well plate or filter material. These attachment methods generally include non-specific adsorption of the protein to the support or covalent attachment of the protein, typically through a free amine group, to a chemically reactive group on the solid support, such as an activated carboxyl, hydroxyl, or aldehyde group. Alternatively, streptavidin coated plates can be used in conjunction with biotinylated antigen(s).

[0303] Thus, the invention provides an assay system or kit for carrying out this diagnostic method. The kit generally includes a support with surface- bound recombinant antigens, and a reporter-labeled anti-human antibody for detecting surface-bound anti-antigen antibody.

Uses of the Polynucleotides

[0304] Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes known techniques.

[0305] The polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each sequence is specifically targeted to and can hybridize with a particular location on an individual human chromosome, thus each polynucleotide of the present invention can routinely be used as a chromosome marker using techniques known in the art. Table 1, column 8 provides the chromosome location of some of the polynucleotides of the invention.

[0306] Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably at least 15 bp (e.g., 15-25 bp) from the sequences shown in SEQ ID NO:X. Primers can optionally be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to SEQ ID NO:X will yield an amplified fragment.

[0307] Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal cycler. Moreover, sublocalization of the polynucleotides can be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, preselection by hybridization to construct chromosome specific-cDNA libraries, and computer mapping techniques (See, e.g., Shuler, Trends Biotechnol 16:456-459 (1998) which is hereby incorporated by reference in its entirety).

[0308] Precise chromosomal location of the polynucleotides can also be achieved using fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides

2,000-4,000 bp are preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

[0309] For chromosome mapping, the polynucleotides can be used individually (to mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes).

[0310] Thus, the present invention also provides a method for chromosomal localization which involves (a) preparing PCR primers from the polynucleotide sequences in Table 1 and/or Table 2 and SEQ ID NO:X and (b) screening somatic cell hybrids containing individual chromosomes.

[0311] The polynucleotides of the present invention would likewise be useful for radiation hybrid mapping, HAPPY mapping, and long range restriction mapping. For a review of these techniques and others known in the art, see, e.g. Dear, "Genome Mapping: A Practical Approach," IRL Press at Oxford University Press, London (1997); Aydin, J. Mol. Med. 77:691-694 (1999); Hacia et al., Mol. Psychiatry 3:483-492 (1998); Herrick et al., Chromosome Res. 7:409-423 (1999); Hamilton et al., Methods Cell Biol. 62:265-280 (2000); and/or Ott, J. Hered. 90:68-70 (1999), each of which is hereby incorporated by reference in its entirety.

[0312] Once a polynucleotide has been mapped to a precise chromosomal location, the physical position of the polynucleotide can be used in linkage analysis. Linkage analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library).) Column 9 of Table 1 provides an OMIM reference identification number of diseases associated with the cytologic band disclosed in column 8 of Table 1, as determined using techniques described herein and by reference to Table 5. Assuming 1 megabase mapping resolution and one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.

[0313] Thus, once coinheritance is established, differences in a polynucleotide of the invention and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as deletions or

translocations, are examined in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicate that the mutation may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

[0314] Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using the polynucleotides of the invention. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker. Diagnostic and prognostic methods, kits and reagents encompassed by the present invention are briefly described below and more thoroughly elsewhere herein (see e.g., the sections labeled "Antibodies", "Diagnostic Assays", and "Methods for Detecting Ovarian and/or Breast Disease, Including Cancer").

[0315] Thus, the invention also provides a diagnostic method useful during diagnosis of a disorder, involving measuring the expression level of polynucleotides of the present invention in cells or body fluid from an individual and comparing the measured gene expression level with a standard level of polynucleotide expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of a disorder. Additional non-limiting examples of diagnostic methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., Example 12).

[0316] In still another embodiment, the invention includes a kit for analyzing samples for the presence of proliferative and/or cancerous polynucleotides derived from a test subject, as further described herein. In a general embodiment, the kit includes at least one polynucleotide probe containing a nucleotide sequence that will specifically hybridize with a polynucleotide of the invention and a suitable container. In a specific embodiment, the kit includes two polynucleotide probes defining an internal region of the polynucleotide of the invention, where each probe has one strand containing a 31'mer-end internal to the region. In a further embodiment, the probes may be useful as primers for polymerase chain reaction amplification.

[0317] Where a diagnosis of a related disorder, including, for example, diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed polynucleotide of the invention expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

[0318] By "measuring the expression level of polynucleotides of the invention" is intended qualitatively or quantitatively measuring or estimating the level of the polypeptide of the invention or the level of the mRNA encoding the polypeptide of the invention in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the polypeptide level or mRNA level in a second biological sample). Preferably, the polypeptide level or mRNA level in the first biological sample is measured or estimated and compared to a standard polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the related disorder or being determined by averaging levels from a population of individuals not having a related disorder. As will be appreciated in the art, once a standard polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

[0319] By "biological sample" is intended any biological sample obtained from an individual, body fluid, cell line, tissue culture, or other source which contains polypeptide of the present invention or the corresponding mRNA. As indicated, biological samples include body fluids (such as semen, lymph, vaginal pool, sera, plasma, urine, synovial fluid and spinal fluid) which contain the polypeptide of the present invention, and tissue sources found to express the polypeptide of the present invention. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

[0320] The method(s) provided above may preferably be applied in a diagnostic method and/or kits in which polynucleotides and/or polypeptides of the invention are attached to a solid support. In one exemplary method, the support may be a “gene chip” or a “biological chip” as described in U.S. Patents 5,837,832, 5,874,219, and 5,856,174. Further, such a gene chip with polynucleotides of the invention attached may be used to identify polymorphisms between the isolated polynucleotide sequences of the invention,

with polynucleotides isolated from a test subject. The knowledge of such polymorphisms (i.e., their location, as well as, their existence) would be beneficial in identifying disease loci for many disorders, such as for example, in neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, digestive disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. Such a method is described in U.S. Patents 5,858,659 and 5,856,104. The U.S. Patents referenced *supra* are hereby incorporated by reference in their entirety herein.

[0321] The present invention encompasses polynucleotides of the present invention that are chemically synthesized, or reproduced as peptide nucleic acids (PNA), or according to other methods known in the art. The use of PNAs would serve as the preferred form if the polynucleotides of the invention are incorporated onto a solid support, or gene chip. For the purposes of the present invention, a peptide nucleic acid (PNA) is a polyamide type of DNA analog and the monomeric units for adenine, guanine, thymine and cytosine are available commercially (Perceptive Biosystems). Certain components of DNA, such as phosphorus, phosphorus oxides, or deoxyribose derivatives, are not present in PNAs. As disclosed by Nielsen et al., Science 254:1497 (1991); and Egholm et al., Nature 365:666 (1993), PNAs bind specifically and tightly to complementary DNA strands and are not degraded by nucleases. In fact, PNA binds more strongly to DNA than DNA itself does. This is probably because there is no electrostatic repulsion between the two strands, and also the polyamide backbone is more flexible. Because of this, PNA/DNA duplexes bind under a wider range of stringency conditions than DNA/DNA duplexes, making it easier to perform multiplex hybridization. Smaller probes can be used than with DNA due to the strong binding. In addition, it is more likely that single base mismatches can be determined with PNA/DNA hybridization because a single mismatch in a PNA/DNA 15-mer lowers the melting point (T.sub.m) by 8°-20° C, vs. 4°-16° C for the DNA/DNA 15-mer duplex. Also, the absence of charge groups in PNA means that hybridization can be done at low ionic strengths and reduce possible interference by salt during the analysis.

[0322] The compounds of the present invention have uses which include, but are not limited to, detecting cancer in mammals. In particular the invention is useful during

diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: acute myelogenous leukemias including acute monocytic leukemia, acute myeloblastic leukemia, acute promyelocytic leukemia, acute myelomonocytic leukemia, acute erythroleukemia, acute megakaryocytic leukemia, and acute undifferentiated leukemia, etc.; and chronic myelogenous leukemias including chronic myelomonocytic leukemia, chronic granulocytic leukemia, etc. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

[0323] The compounds of the present invention have preferred uses which include, but are not limited to, detecting ovarian and/or breast cancer in mammals. In particular the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: ovarian epithelial cancer, ovarian germ cell tumors, ovarian papillary serous adenocarcinoma, ovarian mucinous adenocarcinoma, ovarian Krukenberg tumor, malignant mixed Mullerian tumors, ovarian low malignant tumors, ductal carcinoma in situ, Paget's disease, lobular carcinoma in situ, invasive ductal carcinoma, invasive lobular carcinoma, medullary carcinoma, pipillary carcinoma, secretory carcinoma, and apocrine carcinoma. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

[0324] Pathological cell proliferative disorders are often associated with inappropriate activation of proto-oncogenes. (Gelmann, E. P. et al., "The Etiology of Acute Leukemia: Molecular Genetics and Viral Oncology," in Neoplastic Diseases of the Blood, Vol 1., Wiernik, P. H. et al. eds., 161-182 (1985)). Neoplasias are now believed to result from the qualitative alteration of a normal cellular gene product, or from the quantitative modification of gene expression by insertion into the chromosome of a viral sequence, by chromosomal translocation of a gene to a more actively transcribed region, or by some other mechanism. (Gelmann et al., *supra*) It is likely that mutated or altered expression of specific genes is involved in the pathogenesis of some leukemias, among other tissues and cell types. (Gelmann et al., *supra*) Indeed, the human counterparts of the oncogenes involved in some animal neoplasias have been amplified or translocated in some cases of human leukemia and carcinoma. (Gelmann et al., *supra*)

[0325] For example, c-myc expression is highly amplified in the non-lymphocytic leukemia cell line HL-60. When HL-60 cells are chemically induced to stop proliferation,

the level of c-myc is found to be downregulated. (International Publication Number WO 91/15580). However, it has been shown that exposure of HL-60 cells to a DNA construct that is complementary to the 5' end of c-myc or c-myb blocks translation of the corresponding mRNAs which downregulates expression of the c-myc or c-myb proteins and causes arrest of cell proliferation and differentiation of the treated cells. (International Publication Number WO 91/15580; Wickstrom et al., Proc. Natl. Acad. Sci. 85:1028 (1988); Anfossi et al., Proc. Natl. Acad. Sci. 86:3379 (1989)). However, the skilled artisan would appreciate the present invention's usefulness is not be limited to treatment, prevention, diagnosis and/or prognosis, of proliferative disorders of cells and tissues of hematopoietic origin, in light of the numerous cells and cell types of varying origins which are known to exhibit proliferative phenotypes. In preferred embodiments, the compounds and/or methods of the invention are used to treat, prevent, diagnose, and/or prognose, proliferative disorders of ovarian and/or breast cells and tissues.

[0326] In addition to the foregoing, a polynucleotide of the present invention can be used to control gene expression through triple helix formation or through antisense DNA or RNA. Antisense techniques are discussed, for example, in Okano, J. Neurochem. 56: 560 (1991); "Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance Lee et al., Nucleic Acids Research 6: 3073 (1979); Cooney et al., Science 241: 456 (1988); and Dervan et al., Science 251: 1360 (1991). Both methods rely on binding of the polynucleotide to a complementary DNA or RNA. For these techniques, preferred polynucleotides are usually oligonucleotides 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et al., Nucl. Acids Res. 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1360 (1991)) or to the mRNA itself (antisense - Okano, J. Neurochem. 56:560 (1991); Oligodeoxy-nucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988).) Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. The oligonucleotide described above can also be delivered to cells such that the antisense RNA or DNA may be expressed *in vivo* to inhibit production of polypeptide of the present invention antigens. Both techniques are effective

in model systems, and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease, and in particular, for the treatment of proliferative diseases and/or conditions. Non-limiting antisense and triple helix methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the section labeled "Antisense and Ribozyme (Antagonists)").

[0327] Polynucleotides of the present invention are also useful in gene therapy. One goal of gene therapy is to insert a normal gene into an organism having a defective gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the present invention offer a means of targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell. Additional non-limiting examples of gene therapy methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the sections labeled "Gene Therapy Methods" and Examples 16, 17 and 18).

[0328] The polynucleotides are also useful for identifying individuals from minute biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for identifying personnel. This method does not suffer from the current limitations of "Dog Tags" which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for RFLP.

[0329] The polynucleotides of the present invention can also be used as an alternative to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified because each individual will have a unique set of DNA sequences. Once an unique ID database is established for an individual, positive identification of that individual, living or dead, can be made from extremely small tissue samples.

[0330] Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues, e.g., hair or skin, or body fluids, e.g., blood, saliva, semen, synovial fluid, amniotic fluid, breast milk, lymph, pulmonary sputum or surfactant, urine, fecal matter, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erlich, H., PCR Technology, Freeman and Co. (1992).) Once these specific polymorphic loci are amplified, they are digested with one or more restriction enzymes, yielding an identifying set of bands on a Southern blot probed with DNA corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the present invention can be used as polymorphic markers for forensic purposes.

[0331] There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin. Appropriate reagents can comprise, for example, DNA probes or primers prepared from the sequences of the present invention, specific to tissues, including but not limited to, those sequences referred to in Table 1. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination. Additional non-limiting examples of such uses are further described herein.

[0332] Because ovarian antigens are found expressed in the ovaries, the polynucleotides of the present invention are also useful as hybridization probes for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In a specific embodiment, the polynucleotides of the present invention are also useful as hybridization probes for differential identification of ovarian tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of ovarian tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In addition, for a number of disorders of the

above tissues or cells, significantly higher or lower levels of gene expression of the polynucleotides/polypeptides of the present invention may be detected in certain tissues (e.g., tissues expressing polypeptides and/or polynucleotides of the present invention, for example, normal ovarian tissues or diseased ovarian tissues, and/or those tissues/cells corresponding to the library source relating to a polynucleotide sequence of the invention as disclosed in column 7 of Table 1, and/or cancerous and/or wounded tissues) or bodily fluids (e.g., semen, lymph, vaginal pool, serum, plasma, urine, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, i.e., the expression level in healthy tissue from an individual not having the disorder.

[0333] Thus, the invention provides a diagnostic method of a disorder, which involves: (a) assaying gene expression level in cells or body fluid of an individual; (b) comparing the gene expression level with a standard gene expression level, whereby an increase or decrease in the assayed gene expression level compared to the standard expression level is indicative of a disorder.

[0334] In the very least, the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support, to raise anti-DNA antibodies using DNA immunization techniques, and as an antigen to elicit an immune response.

Uses of the Polypeptides

[0335] Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

[0336] Polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays such as, for example, ABC immunoperoxidase (Hsu et al., J. Histochem. Cytochem. 29:577-580 (1981)) or cell type(s) (e.g., immunocytochemistry assays).

[0337] Antibodies can be used to assay levels of polypeptides encoded by polynucleotides of the invention in a biological sample using classical immunohistological methods known to those of skill in the art (see, e.g., Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine (^{131}I, ^{125}I, ^{123}I, ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{115m}In, ^{113m}In, ^{112}In, ^{111}In), and technetium (^{99}Tc, ^{99m}Tc), thallium (^{201}Ti), gallium (^{68}Ga, ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F), ^{153}Sm, ^{177}Lu, ^{159}Gd, ^{149}Pm, ^{140}La, ^{175}Yb, ^{166}Ho, ^{90}Y, ^{47}Sc, ^{186}Re, ^{188}Re, ^{142}Pr, ^{105}Rh, ^{97}Ru; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0338] In addition to assaying levels of polypeptide of the present invention in a biological sample, proteins can also be detected *in vivo* by imaging. Antibody labels or markers for *in vivo* imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

[0339] An ovarian antigen-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I, ^{112}In, ^{99m}Tc, (^{131}I, ^{125}I, ^{123}I, ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{115m}In, ^{113m}In, ^{112}In, ^{111}In), and technetium (^{99}Tc, ^{99m}Tc), thallium (^{201}Ti), gallium (^{68}Ga, ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F, ^{153}Sm, ^{177}Lu, ^{159}Gd, ^{149}Pm, ^{140}La, ^{175}Yb, ^{166}Ho, ^{90}Y, ^{47}Sc, ^{186}Re, ^{188}Re, ^{142}Pr, ^{105}Rh, ^{97}Ru), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for ovarian disorders. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety

needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of ^{99m}Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which express the polypeptide encoded by a polynucleotide of the invention. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

[0340] In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

[0341] In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

[0342] In a preferred embodiment, the invention provides a method for the specific destruction of ovarian and/or breast cells (e.g., aberrant ovarian and/or breast cells, ovarian and/or breast neoplasm) by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) in association with toxins or cytotoxic prodrugs. In another preferred embodiment the invention provides a method for the specific destruction of tissues/cells corresponding to the library source relating to a polynucleotide sequence of the invention as disclosed in column 7 of Table 1 by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

[0343] By "toxin" is meant one or more compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins,

catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNAse, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, ^{213}Bi, or other radioisotopes such as, for example, ^{103}Pd, ^{133}Xe, ^{131}I, ^{111}In, ^{68}Ge, ^{57}Co, ^{65}Zn, ^{85}Sr, ^{32}P, ^{35}S, ^{90}Y, ^{153}Sm, ^{153}Gd, ^{169}Yb, ^{51}Cr, ^{54}Mn, ^{75}Se, ^{113}Sn, ^{90}Yttrium, ^{117}Tin, ^{186}Rhenium, ^{166}Holmium, and ^{188}Rhenium; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0344] In a specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ^{90}Y. In another specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ^{111}In. In a further specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ^{131}I.

[0345] Techniques known in the art may be applied to label polypeptides of the invention (including antibodies). Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety).

[0346] Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression level of a polypeptide of the present invention in cells or body fluid of an individual; and (b) comparing the assayed polypeptide expression level

with a standard polypeptide expression level, whereby an increase or decrease in the assayed polypeptide expression level compared to the standard expression level is indicative of a disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

[0347] Moreover, polypeptides of the present invention can be used to treat or prevent diseases or conditions of the ovaries and/or breast such as, for example, neoplastic disorders (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below), and as described under "Reproductive System Disorders" below. In preferred embodiments, polynucleotides expressed in a particular tissue type (see, e.g., Table 1, column 7) are used to diagnose, detect, prevent, treat and/or prognose disorders associated with the tissue type. For example, patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B, SOD, catalase, DNA repair proteins), to inhibit the activity of a polypeptide (e.g., an oncogene or tumor supressor), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth inhibition, enhancement of the immune response to proliferative cells or tissues).

[0348] Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease (as described *supra*, and elsewhere herein). For example, administration of an antibody directed to a polypeptide of the present invention can bind, and/or neutralize the polypeptide, and/or reduce overproduction of the polypeptide.

Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

[0349] At the very least, the polypeptides of the present invention can be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover, the polypeptides of the present invention can be used to test the biological activities described herein.

Diagnostic Asssays

[0350] The compounds of the present invention are useful for diagnosis, treatment, prevention and/or prognosis of various ovary related disorders in mammals, preferably humans. Such disorders include, but are not limited to, neoplastic disorders (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below), and as described under "Reproductive System Disorders" below. In preferred embodiments, polynucleotides expressed in a particular tissue type (see, e.g., Table 1, column 7) are used to diagnose, detect, prevent, treat and/or prognose disorders associated with the tissue type.

[0351] Ovarian antigens are expressed in reproductive tissues, with an increased expression level in the ovaries. For a number of ovarian -related disorders, substantially altered (increased or decreased) levels of ovarian antigen gene expression can be detected in ovarian tissue or other cells or bodily fluids (e.g., sera, plasma, urine, semen, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" ovarian antigen gene expression level, that is, the ovarian antigen expression level in ovarian tissues or bodily fluids from an individual not having the ovarian disorder. Thus, the invention provides a diagnostic method useful during diagnosis of an ovarian disorder, which involves measuring the expression level of the gene encoding the ovarian associated polypeptide in ovarian tissue or other cells or body fluid from an individual and comparing the measured gene expression level with a standard ovarian antigens gene

expression level, whereby an increase or decrease in the gene expression level(s) compared to the standard is indicative of an ovarian disorder.

[0352] In specific embodiments, the invention provides a diagnostic method useful during diagnosis of a disorder of a normal or diseased tissue/cell source corresponding to column 7 of Table 1, which involves measuring the expression level of the coding sequence of a polynucleotide sequence associated with this tissue/cell source as disclosed in Table 1 in the tissue/cell source or other cells or body fluid from an individual and comparing the expression level of the coding sequence with a standard expression level of the coding sequence of a polynucleotide sequence, whereby an increase or decrease in the gene expression level(s) compared to the standard is indicative of a disorder of a normal or diseased tissue/cell source corresponding to column 7 of Table 1.

[0353] In particular, it is believed that certain tissues in mammals with cancer of cells or tissue of the ovaries and/or breast express significantly enhanced or reduced levels of normal or altered ovarian antigen expression and mRNA encoding the ovarian associated polypeptide when compared to a corresponding "standard" level. Further, it is believed that enhanced or depressed levels of the ovarian associated polypeptide can be detected in certain body fluids (e.g., sera, plasma, urine, and spinal fluid) or cells or tissue from mammals with such a cancer when compared to sera from mammals of the same species not having the cancer.

[0354] For example, as disclosed herein, ovarian associated polypeptides of the invention are expressed in the ovaries. Accordingly, polynucleotides of the invention (e.g., polynucleotide sequences complementary to all or a portion of an ovarian antigen mRNA nucleotide sequence of SEQ ID NO:X, nucleotide sequence encoding SEQ ID NO:Y, nucleotide sequence encoding a polypeptide encoded by SEQ ID NO:X and/or a nucleotide sequence delineated by columns 8 and 9 of Table 2) and antibodies (and antibody fragments) directed against the polypeptides of the invention may be used to quantitate or qualitate concentrations of cells of the ovaries expressing ovarian antigens, preferrably on their cell surfaces. These polynucleotides and antibodies additionally have diagnostic applications in detecting abnormalities in the level of ovarian antigens gene expression, or abnormalities in the structure and/or temporal, tissue, cellular, or subcellular location of ovarian antigens. These diagnostic assays may be performed *in*

vivo or *in vitro*, such as, for example, on blood samples, biopsy tissue or autopsy tissue. In specific embodiments, polynucleotides and antibodies of the invention are used to quantitate or qualitate tissues/cells corresponding to the library source disclosed in column 7 of Table 1 expressing the corresponding ovarian sequence disclosed in the same row of Table 1, preferrably on their cell surface.

[0355] Thus, the invention provides a diagnostic method useful during diagnosis of an ovarian disorder, including cancers, which involves measuring the expression level of the gene encoding the ovarian antigen polypeptide in ovarian tissue or other cells or body fluid from an individual and comparing the measured gene expression level with a standard ovarian antigen gene expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of an ovarian disorder. In specific embodiments, polynucleotides and antibodies of the invention are used to quantitate or qualitate tissues/cells corresponding to the library source disclosed in column 7 of Table 1 expressing the corresponding ovarian sequence disclosed in the same row of Table 1, preferably on their cell surface.

[0356] Where a diagnosis of a disorder in the ovaries including diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed ovarian antigen gene expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

[0357] By "assaying the expression level of the gene encoding the ovarian associated polypeptide" is intended qualitatively or quantitatively measuring or estimating the level of the ovarian antigen polypeptide or the level of the mRNA encoding the ovarian antigen polypeptide in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the ovarian associated polypeptide level or mRNA level in a second biological sample). Preferably, the ovarian antigen polypeptide expression level or mRNA level in the first biological sample is measured or estimated and compared to a standard ovarian antigen polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the disorder or being determined by averaging levels from a population of individuals not having a disorder of

the ovaries. As will be appreciated in the art, once a standard ovarian antigen polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

[0358] By "biological sample" is intended any biological sample obtained from an individual, cell line, tissue culture, or other source containing ovarian antigen polypeptides (including portions thereof) or mRNA. As indicated, biological samples include body fluids (such as sera, plasma, urine, synovial fluid and spinal fluid) which contain cells expressing ovarian antigen polypeptides, ovarian tissue, and other tissue sources found to express the full length or fragments thereof of a ovarian antigen. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

[0359] Total cellular RNA can be isolated from a biological sample using any suitable technique such as the single-step guanidinium-thiocyanate-phenol-chloroform method described in Chomczynski and Sacchi, Anal. Biochem. 162:156-159 (1987). Levels of mRNA encoding the ovarian antigen polypeptides are then assayed using any appropriate method. These include Northern blot analysis, S1 nuclease mapping, the polymerase chain reaction (PCR), reverse transcription in combination with the polymerase chain reaction (RT-PCR), and reverse transcription in combination with the ligase chain reaction (RT-LCR).

[0360] The present invention also relates to diagnostic assays such as quantitative and diagnostic assays for detecting levels of ovarian antigen polypeptides, in a biological sample (e.g., cells and tissues), including determination of normal and abnormal levels of polypeptides. Thus, for instance, a diagnostic assay in accordance with the invention for detecting over-expression of ovarian antigens compared to normal control tissue samples may be used to detect the presence of tumors. Assay techniques that can be used to determine levels of a polypeptide, such as an ovarian antigen polypeptide of the present invention in a sample derived from a host are well-known to those of skill in the art. Such assay methods include radioimmunoassays, competitive-binding assays, Western Blot analysis and ELISA assays. Assaying ovarian antigen polypeptide levels in a biological sample can occur using any art-known method.

[0361] Assaying ovarian antigen polypeptide levels in a biological sample can occur using antibody-based techniques. For example, ovarian antigen polypeptide

expression in tissues can be studied with classical immunohistological methods (Jalkanen et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, M., et al., J. Cell . Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting ovarian antigen polypeptide gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase, and radioisotopes, such as iodine (^{125}I, ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^{3}H), indium (^{112}In), and technetium (^{99m}Tc), and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0362] The tissue or cell type to be analyzed will generally include those which are known, or suspected, to express the ovarian antigen gene (such as, for example, cells of the ovaries and/or breast or ovarian and/or breast cancer). The protein isolation methods employed herein may, for example, be such as those described in Harlow and Lane (Harlow, E. and Lane, D., 1988, "Antibodies: A Laboratory Manual", Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York), which is incorporated herein by reference in its entirety. The isolated cells can be derived from cell culture or from a patient. The analysis of cells taken from culture may be a necessary step in the assessment of cells that could be used as part of a cell-based gene therapy technique or, alternatively, to test the effect of compounds on the expression of the ovarian antigen gene.

[0363] For example, antibodies, or fragments of antibodies, such as those described herein, may be used to quantitatively or qualitatively detect the presence of ovarian antigen gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0364] In a preferred embodiment, antibodies, or fragments of antibodies directed to any one or all of the predicted epitope domains of the ovarian antigen polypeptides (Shown in Table 1, column 6) may be used to quantitatively or qualitatively detect the presence of ovarian antigen gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0365] In an additional preferred embodiment, antibodies, or fragments of antibodies directed to a conformational epitope of an ovarian antigen may be used to quantitatively or qualitatively detect the presence of ovarian antigen gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

[0366] The antibodies (or fragments thereof), and/or ovarian antigen polypeptides of the present invention may, additionally, be employed histologically, as in immunofluorescence, immunoelectron microscopy or non-immunological assays, for in situ detection of ovarian antigen gene products or conserved variants or peptide fragments thereof. In situ detection may be accomplished by removing a histological specimen from a patient, and applying thereto a labeled antibody or ovarian antigen polypeptide of the present invention. The antibody (or fragment thereof) or ovarian antigen polypeptide is preferably applied by overlaying the labeled antibody (or fragment) onto a biological sample. Through the use of such a procedure, it is possible to determine not only the presence of the ovarian antigen gene product, or conserved variants or peptide fragments, or ovarian antigen polypeptide binding, but also its distribution in the examined tissue. Using the present invention, those of ordinary skill will readily perceive that any of a wide variety of histological methods (such as staining procedures) can be modified in order to achieve such in situ detection.

[0367] Immunoassays and non-immunoassays for ovarian antigen gene products or conserved variants or peptide fragments thereof will typically comprise incubating a sample, such as a biological fluid, a tissue extract, freshly harvested cells, or lysates of cells which have been incubated in cell culture, in the presence of a detectably labeled antibody capable of binding ovarian antigen gene products or conserved variants or peptide fragments thereof, and detecting the bound antibody by any of a number of techniques well-known in the art.

[0368] The biological sample may be brought in contact with and immobilized onto a solid phase support or carrier such as nitrocellulose, or other solid support which is capable of immobilizing cells, cell particles or soluble proteins. The support may then be washed with suitable buffers followed by treatment with the detectably labeled anti-

ovarian antigen antibody or detectable ovarian antigen polypeptide. The solid phase support may then be washed with the buffer a second time to remove unbound antibody or polypeptide. Optionally the antibody is subsequently labeled. The amount of bound label on solid support may then be detected by conventional means.

[0369] By "solid phase support or carrier" is intended any support capable of binding an antigen or an antibody. Well-known supports or carriers include glass, polystyrene, polypropylene, polyethylene, dextran, nylon, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite. The nature of the carrier can be either soluble to some extent or insoluble for the purposes of the present invention. The support material may have virtually any possible structural configuration so long as the coupled molecule is capable of binding to an antigen or antibody. Thus, the support configuration may be spherical, as in a bead, or cylindrical, as in the inside surface of a test tube, or the external surface of a rod. Alternatively, the surface may be flat such as a sheet, test strip, etc. Preferred supports include polystyrene beads. Those skilled in the art will know many other suitable carriers for binding antibody or antigen, or will be able to ascertain the same by use of routine experimentation.

[0370] The binding activity of a given lot of anti-ovarian antigen antibody or ovarian antigen polypeptide may be determined according to well known methods. Those skilled in the art will be able to determine operative and optimal assay conditions for each determination by employing routine experimentation.

[0371] In addition to assaying ovarian antigen polypeptide levels or polynucleotide levels in a biological sample obtained from an individual, ovarian antigen polypeptide or polynucleotide can also be detected *in vivo* by imaging. For example, in one embodiment of the invention, ovarian antigen polypeptide and/or anti- ovarian antigen antibodies are used to image ovarian diseased cells, such as neoplasms. In another embodiment, ovarian antigen polynucleotides of the invention (e.g., polynucleotides complementary to all or a portion of ovarian antigen mRNA) and/or anti- ovarian antigen antibodies (e.g., antibodies directed to any one or a combination of the epitopes of ovarian antigens, antibodies directed to a conformational epitope of ovarian antigens, antibodies directed to the full length polypeptide expressed on the cell surface of a mammalian cell) are used to image diseased or neoplastic cells of the ovaries.

[0372] Antibody labels or markers for *in vivo* imaging of ovarian antigen polypeptides include those detectable by X-radiography, NMR, MRI, CAT-scans or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma. Where *in vivo* imaging is used to detect enhanced levels of ovarian antigen polypeptides for diagnosis in humans, it may be preferable to use human antibodies or "humanized" chimeric monoclonal antibodies. Such antibodies can be produced using techniques described herein or otherwise known in the art. For example methods for producing chimeric antibodies are known in the art. See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).

[0373] Additionally, any ovarian antigen polypeptides whose presence can be detected, can be administered. For example, ovarian antigen polypeptides labeled with a radio-opaque or other appropriate compound can be administered and visualized *in vivo*, as discussed, above for labeled antibodies. Further such ovarian antigen polypeptides can be utilized for *in vitro* diagnostic procedures.

[0374] An ovarian antigen polypeptide-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I, ^{112}In, ^{99m}Tc), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for an ovarian and/or breast disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of ^{99m}Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain ovarian antigen protein. *In vivo* tumor imaging is described in S.W.

Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

[0375] With respect to antibodies, one of the ways in which the anti- ovarian antigen antibody can be detectably labeled is by linking the same to an enzyme and using the linked product in an enzyme immunoassay (EIA) (Voller, A., "The Enzyme Linked Immunosorbent Assay (ELISA)", 1978, Diagnostic Horizons 2:1-7, Microbiological Associates Quarterly Publication, Walkersville, MD); Voller et al., J. Clin. Pathol. 31:507-520 (1978); Butler, J.E., Meth. Enzymol. 73:482-523 (1981); Maggio, E. (ed.), 1980, Enzyme Immunoassay, CRC Press, Boca Raton, FL,; Ishikawa, E. et al., (eds.), 1981, Enzyme Immunoassay, Kgaku Shoin, Tokyo). The enzyme which is bound to the antibody will react with an appropriate substrate, preferably a chromogenic substrate, in such a manner as to produce a chemical moiety which can be detected, for example, by spectrophotometric, fluorimetric or by visual means. Enzymes which can be used to detectably label the antibody include, but are not limited to, malate dehydrogenase, staphylococcal nuclease, delta-5-steroid isomerase, yeast alcohol dehydrogenase, alpha-glycerophosphate, dehydrogenase, triose phosphate isomerase, horseradish peroxidase, alkaline phosphatase, asparaginase, glucose oxidase, beta-galactosidase, ribonuclease, urease, catalase, glucose-6-phosphate dehydrogenase, glucoamylase and acetylcholinesterase. Additionally, the detection can be accomplished by colorimetric methods which employ a chromogenic substrate for the enzyme. Detection may also be accomplished by visual comparison of the extent of enzymatic reaction of a substrate in comparison with similarly prepared standards.

[0376] Detection may also be accomplished using any of a variety of other immunoassays. For example, by radioactively labeling the antibodies or antibody fragments, it is possible to detect ovarian antigens through the use of a radioimmunoassay (RIA) (see, for example, Weintraub, B., Principles of Radioimmunoassays, Seventh Training Course on Radioligand Assay Techniques, The Endocrine Society, March, 1986, which is incorporated by reference herein). The radioactive isotope can be detected by means including, but not limited to, a gamma counter, a scintillation counter, or autoradiography.

[0377] It is also possible to label the antibody with a fluorescent compound. When the fluorescently labeled antibody is exposed to light of the proper wave length, its presence can then be detected due to fluorescence. Among the most commonly used fluorescent labeling compounds are fluorescein isothiocyanate, rhodamine, phycoerythrin, phycocyanin, allophycocyanin, ophthaldehyde and fluorescamine.

[0378] The antibody can also be detectably labeled using fluorescence emitting metals such as ^{152}Eu, or others of the lanthanide series. These metals can be attached to the antibody using such metal chelating groups as diethylenetriaminepentacetic acid (DTPA) or ethylenediaminetetraacetic acid (EDTA).

[0379] The antibody also can be detectably labeled by coupling it to a chemiluminescent compound. The presence of the chemiluminescent-tagged antibody is then determined by detecting the presence of luminescence that arises during the course of a chemical reaction. Examples of particularly useful chemiluminescent labeling compounds are luminol, isoluminol, theromatic acridinium ester, imidazole, acridinium salt and oxalate ester.

[0380] Likewise, a bioluminescent compound may be used to label the antibody of the present invention. Bioluminescence is a type of chemiluminescence found in biological systems in, which a catalytic protein increases the efficiency of the chemiluminescent reaction. The presence of a bioluminescent protein is determined by detecting the presence of luminescence. Important bioluminescent compounds for purposes of labeling are luciferin, luciferase and aequorin.

Methods for Detecting Ovarian and/or Breast Disease, Including Cancer

[0381] In general, an ovarian and/or breast disease or cancer may be detected in a patient based on the presence of one or more ovarian antigen proteins of the invention and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, urine, and/or tumor biopsies) obtained from the patient. In other words, such proteins and/or polynucleotides may be used as markers to indicate the presence or absence of an ovarian and/or breast disease or disorder, including cancer. Cancers that may be diagnosed, and/or prognosed using the compositions of the invention include but are not limited to, ovarian and/or breast cancer. In addition, such proteins and/or polynucleotidse

may be useful for the detection of other diseases and cancers, including cancers of tissues/cells corresponding to the library source disclosed in column 7 of Table 1 expressing the corresponding ovarian sequence disclosed in the same row of Table 1. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding ovarian antigen polypeptides, which is also indicative of the presence or absence of an ovarian and/or breast disease or disorder, including cancer. In general, ovarian antigen polypeptides should be present at a level that is at least three fold higher in diseased tissue than in normal tissue.

[0382] There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. See, e.g., Harlow and Lane, *supra.* In general, the presence or absence of an ovarian and/or breast disease in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

[0383] In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the ovarian antigen polypeptide of the invention from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include ovarian antigen polypeptides and portions thereof, or antibodies, to which the binding agent binds, as described above.

[0384] The solid support may be any material known to those of skill in the art to which ovarian antigen polypeptides of the invention may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for the suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 ug, and preferably about 100 ng to about 1 ug, is sufficient to immobilize an adequate amount of binding agent.

[0385] Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (see, e.g., Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

Gene Therapy Methods

[0386] Also encompassed by the present invention are gene therapy methods for treating or preventing disorders, diseases and conditions. The gene therapy methods relate to the introduction of nucleic acid (DNA, RNA and antisense DNA or RNA) sequences

into an animal to achieve expression of an ovarian antigen of the present invention. This method requires a polynucleotide, which codes for a polypeptide of the present invention operatively linked to a promoter and any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques are known in the art, see, for example, WO90/11092, which is herein incorporated by reference.

[0387] Thus, for example, cells from a patient may be engineered with a polynucleotide (DNA or RNA) comprising a promoter operably linked to a polynucleotide of the present invention ex vivo, with the engineered cells then being provided to a patient to be treated with the polypeptide of the present invention. Such methods are well-known in the art. For example, see Belldegrun, A., et al., J. Natl. Cancer Inst. 85: 207-216 (1993); Ferrantini, M. et al., Cancer Research 53: 1107-1112 (1993); Ferrantini, M. et al., J. Immunology 153: 4604-4615 (1994); Kaido, T., et al., Int. J. Cancer 60: 221-229 (1995); Ogura, H., et al., Cancer Research 50: 5102-5106 (1990); Santodonato, L., et al., Human Gene Therapy 7:1-10 (1996); Santodonato, L., et al., Gene Therapy 4:1246-1255 (1997); and Zhang, J.-F. et al., Cancer Gene Therapy 3: 31-38 (1996)), which are herein incorporated by reference. In one embodiment, the cells which are engineered are arterial cells. The arterial cells may be reintroduced into the patient through direct injection to the artery, the tissues surrounding the artery, or through catheter injection.

[0388] As discussed in more detail below, the polynucleotide constructs can be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, and the like). The polynucleotide constructs may be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

[0389] In one embodiment, the polynucleotide of the present invention is delivered as a naked polynucleotide. The term "naked" polynucleotide, DNA or RNA refers to sequences that are free from any delivery vehicle that acts to assist, promote or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotide of the present invention can also be delivered in liposome formulations and lipofectin formulations and the like can be prepared by methods well known to those skilled in the art. Such methods

are described, for example, in U.S. Patent Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference.

[0390] The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Appropriate vectors include pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; pSVK3, pBPV, pMSG and pSVL available from Pharmacia; and pEF1/V5, pcDNA3.1, and pRc/CMV2 available from Invitrogen. Other suitable vectors will be readily apparent to the skilled artisan.

[0391] Any strong promoter known to those skilled in the art can be used for driving the expression of the polynucleotide sequence. Suitable promoters include adenoviral promoters, such as the adenoviral major late promoter; or heterologous promoters, such as the cytomegalovirus (CMV) promoter; the respiratory syncytial virus (RSV) promoter; inducible promoters, such as the MMT promoter, the metallothionein promoter; heat shock promoters; the albumin promoter; the ApoAI promoter; human globin promoters; viral thymidine kinase promoters, such as the Herpes Simplex thymidine kinase promoter; retroviral LTRs; the b-actin promoter; and human growth hormone promoters. The promoter also may be the native promoter for the polynucleotide of the present invention.

[0392] Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

[0393] The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular, fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the

space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

[0394] For the naked nucleic acid sequence injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 mg/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration.

[0395] The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked DNA constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

[0396] The naked polynucleotides are delivered by any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, and so-called "gene guns". These delivery methods are known in the art.

[0397] The constructs may also be delivered with delivery vehicles such as viral sequences, viral particles, liposome formulations, lipofectin, precipitating agents, etc. Such methods of delivery are known in the art.

[0398] In certain embodiments, the polynucleotide constructs are complexed in a liposome preparation. Liposomal preparations for use in the instant invention include cationic (positively charged), anionic (negatively charged) and neutral preparations.

However, cationic liposomes are particularly preferred because a tight charge complex can be formed between the cationic liposome and the polyanionic nucleic acid. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference); mRNA (Malone et al., Proc. Natl. Acad. Sci. USA (1989) 86:6077-6081, which is herein incorporated by reference); and purified transcription factors (Debs et al., J. Biol. Chem. (1990) 265:10189-10192, which is herein incorporated by reference), in functional form.

[0399] Cationic liposomes are readily available. For example, N[1-2,3-dioleyloxy)propyl]-N,N,N-triethylammonium (DOTMA) liposomes are particularly useful and are available under the trademark Lipofectin, from GIBCO BRL, Grand Island, N.Y., (see, also, Felgner et al., Proc. Natl Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer).

[0400] Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g. PCT Publication No. WO 90/11092 (which is herein incorporated by reference) for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes. Preparation of DOTMA liposomes is explained in the literature, see, e.g., P. Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417, which is herein incorporated by reference. Similar methods can be used to prepare liposomes from other cationic lipid materials.

[0401] Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, Ala.), or can be easily prepared using readily available materials. Such materials include phosphatidyl choline, cholesterol, phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphoshatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

[0402] For example, commercially dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), and dioleoylphosphatidyl ethanolamine (DOPE) can be used in various combinations to make conventional liposomes, with or without the

addition of cholesterol. Thus, for example, DOPG/DOPC vesicles can be prepared by drying 50 mg each of DOPG and DOPC under a stream of nitrogen gas into a sonication vial. The sample is placed under a vacuum pump overnight and is hydrated the following day with deionized water. The sample is then sonicated for 2 hours in a capped vial, using a Heat Systems model 350 sonicator equipped with an inverted cup (bath type) probe at the maximum setting while the bath is circulated at 15EC. Alternatively, negatively charged vesicles can be prepared without sonication to produce multilamellar vesicles or by extrusion through nucleopore membranes to produce unilamellar vesicles of discrete size. Other methods are known and available to those of skill in the art.

[0403] The liposomes can comprise multilamellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs), with SUVs being preferred. The various liposome-nucleic acid complexes are prepared using methods well known in the art. See, e.g., Straubinger et al., Methods of Immunology (1983), 101:512-527, which is herein incorporated by reference. For example, MLVs containing nucleic acid can be prepared by depositing a thin film of phospholipid on the walls of a glass tube and subsequently hydrating with a solution of the material to be encapsulated. SUVs are prepared by extended sonication of MLVs to produce a homogeneous population of unilamellar liposomes. The material to be entrapped is added to a suspension of preformed MLVs and then sonicated. When using liposomes containing cationic lipids, the dried lipid film is resuspended in an appropriate solution such as sterile water or an isotonic buffer solution such as 10 mM Tris/NaCl, sonicated, and then the preformed liposomes are mixed directly with the DNA. The liposome and DNA form a very stable complex due to binding of the positively charged liposomes to the cationic DNA. SUVs find use with small nucleic acid fragments. LUVs are prepared by a number of methods, well known in the art. Commonly used methods include Ca^{2+}-EDTA chelation (Papahadjopoulos et al., Biochim. Biophys. Acta (1975) 394:483; Wilson et al., Cell 17:77 (1979); ether injection (Deamer, D. and Bangham, A., Biochim. Biophys. Acta 443:629 (1976); Ostro et al., Biochem. Biophys. Res. Commun. 76:836 (1977); Fraley et al., Proc. Natl. Acad. Sci. USA 76:3348 (1979)); detergent dialysis (Enoch, H. and Strittmatter, P., Proc. Natl. Acad. Sci. USA 76:145 (1979)); and reverse-phase evaporation (REV) (Fraley et al., J. Biol. Chem. 255:10431 (1980); Szoka et al., Proc. Natl. Acad. Sci.

USA 75:145 (1978); Schaefer-Ridder et al., Science 215:166 (1982)), which are herein incorporated by reference.

[0404] Generally, the ratio of DNA to liposomes will be from about 10:1 to about 1:10. Preferably, the ration will be from about 5:1 to about 1:5. More preferably, the ration will be about 3:1 to about 1:3. Still more preferably, the ratio will be about 1:1.

[0405] U.S. Patent No. 5,676,954 (which is herein incorporated by reference) reports on the injection of genetic material, complexed with cationic liposomes carriers, into mice. U.S. Patent Nos. 4,897,355, 4,946,787, 5,049,386, 5,459,127, 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide cationic lipids for use in transfecting DNA into cells and mammals. U.S. Patent Nos. 5,589,466, 5,693,622, 5,580,859, 5,703,055, and International Publication No. WO 94/9469 provide methods for delivering DNA-cationic lipid complexes to mammals.

[0406] In certain embodiments, cells are engineered, ex vivo or *in vivo*, using a retroviral particle containing RNA which comprises a sequence encoding a polypeptide of the present invention. Retroviruses from which the retroviral plasmid vectors may be derived include, but are not limited to, Moloney Murine Leukemia Virus, spleen necrosis virus, Rous sarcoma Virus, Harvey Sarcoma Virus, avian leukosis virus, gibbon ape leukemia virus, human immunodeficiency virus, Myeloproliferative Sarcoma Virus, and mammary tumor virus.

[0407] The retroviral plasmid vector is employed to transduce packaging cell lines to form producer cell lines. Examples of packaging cells which may be transfected include, but are not limited to, the PE501, PA317, R-2, R-AM, PA12, T19-14X, VT-19-17-H2, RCRE, RCRIP, GP+E-86, GP+envAm12, and DAN cell lines as described in Miller, Human Gene Therapy 1:5-14 (1990), which is incorporated herein by reference in its entirety. The vector may transduce the packaging cells through any means known in the art. Such means include, but are not limited to, electroporation, the use of liposomes, and $CaPO_4$ precipitation. In one alternative, the retroviral plasmid vector may be encapsulated into a liposome, or coupled to a lipid, and then administered to a host.

[0408] The producer cell line generates infectious retroviral vector particles which include polynucleotide encoding a polypeptide of the present invention. Such retroviral

vector particles then may be employed, to transduce eukaryotic cells, either *in vitro* or *in vivo*. The transduced eukaryotic cells will express a polypeptide of the present invention.

[0409] In certain other embodiments, cells are engineered, ex vivo or *in vivo*, with polynucleotide contained in an adenovirus vector. Adenovirus can be manipulated such that it encodes and expresses a polypeptide of the present invention, and at the same time is inactivated in terms of its ability to replicate in a normal lytic viral life cycle. Adenovirus expression is achieved without integration of the viral DNA into the host cell chromosome, thereby alleviating concerns about insertional mutagenesis. Furthermore, adenoviruses have been used as live enteric vaccines for many years with an excellent safety profile (Schwartz, et al., Am. Rev. Respir. Dis.109:233-238 (1974)). Finally, adenovirus mediated gene transfer has been demonstrated in a number of instances including transfer of alpha-1-antitrypsin and CFTR to the lungs of cotton rats (Rosenfeld et al., Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143-155 (1991)). Furthermore, extensive studies to attempt to establish adenovirus as a causative agent in human cancer were uniformly negative (Green et al., Proc. Natl. Acad. Sci. USA 76:6606 (1979)).

[0410] Suitable adenoviral vectors useful in the present invention are described, for example, in Kozarsky and Wilson, Curr. Opin. Genet. Devel. 3:499-503 (1993); Rosenfeld et al., Cell 68:143-155 (1992); Engelhardt et al., Human Genet. Ther. 4:759-769 (1993); Yang et al., Nature Genet. 7:362-369 (1994); Wilson et al., Nature 365:691-692 (1993); and U.S. Patent No. 5,652,224, which are herein incorporated by reference. For example, the adenovirus vector Ad2 is useful and can be grown in human 293 cells. These cells contain the E1 region of adenovirus and constitutively express Ela and Elb, which complement the defective adenoviruses by providing the products of the genes deleted from the vector. In addition to Ad2, other varieties of adenovirus (e.g., Ad3, Ad5, and Ad7) are also useful in the present invention.

[0411] Preferably, the adenoviruses used in the present invention are replication deficient. Replication deficient adenoviruses require the aid of a helper virus and/or packaging cell line to form infectious particles. The resulting virus is capable of infecting cells and can express a polynucleotide of interest which is operably linked to a promoter, but cannot replicate in most cells. Replication deficient adenoviruses may be deleted in

one or more of all or a portion of the following genes: E1a, E1b, E3, E4, E2a, or L1 through L5.

[0412] In certain other embodiments, the cells are engineered, ex vivo or *in vivo*, using an adeno-associated virus (AAV). AAVs are naturally occurring defective viruses that require helper viruses to produce infectious particles (Muzyczka, N., Curr. Topics in Microbiol. Immunol. 158:97 (1992)). It is also one of the few viruses that may integrate its DNA into non-dividing cells. Vectors containing as little as 300 base pairs of AAV can be packaged and can integrate, but space for exogenous DNA is limited to about 4.5 kb. Methods for producing and using such AAVs are known in the art. See, for example, U.S. Patent Nos. 5,139,941, 5,173,414, 5,354,678, 5,436,146, 5,474,935, 5,478,745, and 5,589,377.

[0413] For example, an appropriate AAV vector for use in the present invention will include all the sequences necessary for DNA replication, encapsidation, and host-cell integration. The polynucleotide construct is inserted into the AAV vector using standard cloning methods, such as those found in Sambrook et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press (1989). The recombinant AAV vector is then transfected into packaging cells which are infected with a helper virus, using any standard technique, including lipofection, electroporation, calcium phosphate precipitation, etc. Appropriate helper viruses include adenoviruses, cytomegaloviruses, vaccinia viruses, or herpes viruses. Once the packaging cells are transfected and infected, they will produce infectious AAV viral particles which contain the polynucleotide construct. These viral particles are then used to transduce eukaryotic cells, either ex vivo or *in vivo*. The transduced cells will contain the polynucleotide construct integrated into its genome, and will express a polypeptide of the invention.

[0414] Another method of gene therapy involves operably associating heterologous control regions and endogenous ovarian antigen polynucleotide sequences (e.g., encoding an ovarian antigen polypeptide of the present invention) via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), which are herein

incorporated by reference. This method involves the activation of a gene which is present in the target cells, but which is not normally expressed in the cells, or is expressed at a lower level than desired.

[0415] Polynucleotide constructs are made, using standard techniques known in the art, which contain the promoter with targeting sequences flanking the promoter. Suitable promoters are described herein. The targeting sequence is sufficiently complementary to an endogenous sequence to permit homologous recombination of the promoter-targeting sequence with the endogenous sequence. The targeting sequence will be sufficiently near the 5' end of the desired endogenous polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination.

[0416] The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter. The amplified promoter and targeting sequences are digested and ligated together.

[0417] The promoter-targeting sequence construct is delivered to the cells, either as naked polynucleotide, or in conjunction with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, whole viruses, lipofection, precipitating agents, etc., described in more detail above. The P promoter-targeting sequence can be delivered by any method, included direct needle injection, intravenous injection, topical administration, catheter infusion, particle accelerators, etc. The methods are described in more detail below.

[0418] The promoter-targeting sequence construct is taken up by cells. Homologous recombination between the construct and the endogenous sequence takes place, such that an endogenous sequence is placed under the control of the promoter. The promoter then drives the expression of the endogenous sequence.

[0419] The polynucleotide encoding a polypeptide of the present invention may contain a secretory signal sequence that facilitates secretion of the protein. Typically, the signal sequence is positioned in the coding region of the polynucleotide to be expressed

towards or at the 5' end of the coding region. The signal sequence may be homologous or heterologous to the ovarian antigen polynucleotide of interest and may be homologous or heterologous to the cells to be transfected. Additionally, the signal sequence may be chemically synthesized using methods known in the art.

[0420] Any mode of administration of any of the above-described polynucleotides constructs can be used so long as the mode results in the expression of one or more molecules in an amount sufficient to provide a therapeutic effect. This includes direct needle injection, systemic injection, catheter infusion, biolistic injectors, particle accelerators (i.e., "gene guns"), gelfoam sponge depots, other commercially available depot materials, osmotic pumps (e.g., Alza minipumps), oral or suppositorial solid (tablet or pill) pharmaceutical formulations, and decanting or topical applications during surgery. For example, direct injection of naked calcium phosphate-precipitated plasmid into rat liver and rat spleen or a protein-coated plasmid into the portal vein has resulted in gene expression of the foreign gene in the rat livers (Kaneda et al., Science 243:375 (1989)).

[0421] A preferred method of local administration is by direct injection. Preferably, a recombinant molecule of the present invention complexed with a delivery vehicle is administered by direct injection into or locally within the area of arteries. Administration of a composition locally within the area of arteries refers to injecting the composition centimeters and preferably, millimeters within arteries.

[0422] Another method of local administration is to contact a polynucleotide construct of the present invention in or around a surgical wound. For example, a patient can undergo surgery and the polynucleotide construct can be coated on the surface of tissue inside the wound or the construct can be injected into areas of tissue inside the wound.

[0423] Therapeutic compositions useful in systemic administration, include recombinant molecules of the present invention complexed to a targeted delivery vehicle of the present invention. Suitable delivery vehicles for use with systemic administration comprise liposomes comprising ligands for targeting the vehicle to a particular site. In specific embodiments, suitable delivery vehicles for use with systemic administration comprise liposomes comprising polypeptides of the invention for targeting the vehicle to a particular site.

[0424] Preferred methods of systemic administration, include intravenous injection, aerosol, oral and percutaneous (topical) delivery. Intravenous injections can be performed using methods standard in the art. Aerosol delivery can also be performed using methods standard in the art (see, for example, Stribling et al., Proc. Natl. Acad. Sci. USA 189:11277-11281, 1992, which is incorporated herein by reference). Oral delivery can be performed by complexing a polynucleotide construct of the present invention to a carrier capable of withstanding degradation by digestive enzymes in the gut of an animal. Examples of such carriers, include plastic capsules or tablets, such as those known in the art. Topical delivery can be performed by mixing a polynucleotide construct of the present invention with a lipophilic reagent (e.g., DMSO) that is capable of passing into the skin.

[0425] Determining an effective amount of substance to be delivered can depend upon a number of factors including, for example, the chemical structure and biological activity of the substance, the age and weight of the animal, the precise condition requiring treatment and its severity, and the route of administration. The frequency of treatments depends upon a number of factors, such as the amount of polynucleotide constructs administered per dose, as well as the health and history of the subject. The precise amount, number of doses, and timing of doses will be determined by the attending physician or veterinarian.

[0426] Therapeutic compositions of the present invention can be administered to any animal, preferably to mammals and birds. Preferred mammals include humans, dogs, cats, mice, rats, rabbits sheep, cattle, horses and pigs, with humans being particularly preferred.

Biological Activities

[0427] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, can be used in assays to test for one or more biological activities. If these polynucleotides or polypeptides, or agonists or antagonists of the present invention, do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides and polypeptides, and agonists or antagonists could be used to treat, prevent diagnose and/or prognose the associated disease.

[0428] The ovarian antigen polynucleotides and polypeptides of the invention are predicted to have predominant expression in ovarian tissues.

[0429] Thus, the ovarian antigens of the invention may be useful as therapeutic molecules. Each would be useful for diagnosis, detection, treatment and/or prevention of diseases or disorders of the ovaries and/or breast, neoplastic disorders (e.g., ovarian Krukenberg tumor, malignant mixed Mullerian tumors, and/or as described under "Hyperproliferative Disorders" below), infectious diseases (e.g., mastitis, oophoritis, and/or as described under "Infectious Diseases" below), and inflammatory diseases (e.g., abcesses and/or as described under "Immune Disorders" below), and as described under "Reproductive System Disorders" below.

[0430] In a preferred embodiment, polynucleotides of the invention (e.g., a nucleic acid sequence of SEQ ID NO:X or the complement thereof; or the cDNA sequence contained in Clone ID NO:Z, or fragments or variants thereof) and/or polypeptides of the invention (e.g., an amino acid sequence contained in SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, or the complement threof, an amino acid sequence encoded by the cDNA sequence contained in Clone ID NO:Z and fragments or variants thereof as described herein) are useful for the diagnosis, detection, treatement, and/or prevention of diseases or disorders of the tissues/cells corresponding to the library source disclosed in column 7 of Table 1 expressing the corresponding ovarian sequence disclosed in the same row of Table 1. In certain embodiments, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose and/or prognose diseases and/or disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1, column 7 (Tissue Distribution Library Code).

[0431] Particularly, the ovarian antigens may be a useful therapeutic for ovarian and/or breast cancer. Treatment, diagnosis, detection, and/or prevention of ovarian and/or breast disorders could be carried out using an ovarian antigen or soluble form of an ovarian antigen, an ovarian antigen ligand, gene therapy, or ex vivo applications. Moreover, inhibitors of an ovarian antigen, either blocking antibodies or mutant forms, could modulate the expression of the ovarian antigen. These inhibitors may be useful to

treat, diagnose, detect, and/or prevent diseases associated with the misregulation of an ovarian antigen.

[0432] In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells (e.g., normal or diseased ovarian and/or breast cells) by administering polypeptides of the invention (e.g., ovarian antigen polypeptides or anti- ovarian antigen antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell (e.g., an aberrant ovarian and/or breast cell or ovarian and/or breast cancer cell). In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

[0433] In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of aberrant ovarian and/or breast cells, including, but not limited to, ovarian and/or breast tumor cells) by administering polypeptides of the invention (e.g., ovarian antigen polypeptides or fragments thereof, or anti- ovarian antigen antibodies) in association with toxins or cytotoxic prodrugs.

[0434] By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, cytotoxins (cytotoxic agents), or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNAse, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, ^{213}Bi, or other radioisotopes such as, for example, ^{103}Pd, ^{133}Xe, ^{131}I, ^{68}Ge, ^{57}Co, ^{65}Zn, ^{85}Sr, ^{32}P, ^{35}S, ^{90}Y, ^{153}Sm, ^{153}Gd, ^{169}Yb, ^{51}Cr, ^{54}Mn, ^{75}Se, ^{113}Sn,

^{90}Yttrium, ^{117}Tin, ^{186}Rhenium, ^{166}Holmium, and ^{188}Rhenium; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

[0435] Techniques known in the art may be applied to label antibodies of the invention. Such techniques include, but are not limited to, the use of bifunctional conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety). A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclothosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis- dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

[0436] By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubisin, and phenoxyacetamide derivatives of doxorubicin.

[0437] It will be appreciated that conditions caused by a decrease in the standard or normal level of an ovarian antigen activity in an individual, particularly disorders of the ovaries and/or breast, can be treated by administration of an ovarian antigen polypeptide (e.g., such as, for example, the complete ovarian antigen polypeptide, the soluble form of

the extracellular domain of an ovarian antigen polypeptide, or cells expressing the complete protein) or agonist. Thus, the invention also provides a method of treatment of an individual in need of an increased level of ovarian antigen activity comprising administering to such an individual a pharmaceutical composition comprising an amount of an isolated ovarian antigen polypeptide of the invention, or agonist thereof (e.g., an agonistic anti- ovarian antigen antibody), effective to increase the ovarian antigen activity level in such an individual.

[0438] It will also be appreciated that conditions caused by a increase in the standard or normal level of ovarian antigen activity in an individual, particularly disorders of the ovaries and/or breast, can be treated by administration of ovarian antigen polypeptides (e.g., such as, for example, the complete ovarian antigen polypeptide, the soluble form of the extracellular domain of an ovarian antigen polypeptide, or cells expressing the complete protein) or antagonist (e.g., an antagonistic ovarian antigen antibody). Thus, the invention also provides a method of treatment of an individual in need of an decreased level of ovarian antigen activity comprising administering to such an individual a pharmaceutical composition comprising an amount of an isolated ovarian antigen polypeptide of the invention, or antagonist thereof (e.g., an antagonistic anti-ovarian antigen antibody), effective to decrease the ovarian antigen activity level in such an individual.

[0439] More generally, polynucleotides, translation products and antibodies corresponding to this gene may be useful for the diagnosis, prognosis, prevention, and/or treatment of diseases and/or disorders associated with the following systems.

Reproductive System Disorders

[0440] The polynucleotides or polypeptides, or agonists or antagonists of the invention may be used for the diagnosis, treatment, or prevention of diseases and/or disorders of the reproductive system. Reproductive system disorders that can be treated by the compositions of the invention, include, but are not limited to, reproductive system injuries, infections, neoplastic disorders, congenital defects, and diseases or disorders which result in infertility, complications with pregnancy, labor, or parturition, and postpartum difficulties.

[0441] Reproductive system disorders and/or diseases include diseases and/or disorders of the testes, including, but not limited to, testicular atrophy, testicular feminization, cryptorchism (unilateral and bilateral), anorchia, ectopic testis, epididymitis and orchitis (typically resulting from infections such as, for example, gonorrhea, mumps, tuberculosis, and syphilis), testicular torsion, vasitis nodosa, germ cell tumors (e.g., seminomas, embryonal cell carcinomas, teratocarcinomas, choriocarcinomas, yolk sac tumors, and teratomas), stromal tumors (e.g., Leydig cell tumors), hydrocele, hematocele, varicocele, spermatocele, inguinal hernia, and disorders of sperm production (e.g., immotile cilia syndrome, aspermia, asthenozoospermia, azoospermia, oligospermia, and teratozoospermia).

[0442] Reproductive system disorders also include, but are not limited to, disorders of the prostate gland, such as acute non-bacterial prostatitis, chronic non-bacterial prostatitis, acute bacterial prostatitis, chronic bacterial prostatitis, prostatodystonia, prostatosis, granulomatous prostatitis, malacoplakia, benign prostatic hypertrophy or hyperplasia, and prostate neoplastic disorders, including adenocarcinomas, transitional cell carcinomas, ductal carcinomas, and squamous cell carcinomas.

[0443] Additionally, the compositions of the invention may be useful in the diagnosis, treatment, and/or prevention of disorders or diseases of the penis and urethra, including, but not limited to, inflammatory disorders, such as balanoposthitis, balanitis xerotica obliterans, phimosis, paraphimosis, syphilis, herpes simplex virus, gonorrhea, non-gonococcal urethritis, chlamydia, mycoplasma, trichomonas, HIV, AIDS, Reiter's syndrome, condyloma acuminatum, condyloma latum, and pearly penile papules; urethral abnormalities, such as hypospadias, epispadias, and phimosis; premalignant lesions, including Erythroplasia of Queyrat, Bowen's disease, Bowenoid paplosis, giant condyloma of Buscke-Lowenstein, and varrucous carcinoma; penile cancers, including squamous cell carcinomas, carcinoma in situ, verrucous carcinoma, and disseminated penile carcinoma; urethral neoplastic disorders, including penile urethral carcinoma, bulbomembranous urethral carcinoma, and prostatic urethral carcinoma; and erectile disorders, such as priapism, Peyronie's disease, erectile dysfunction, and impotence.

[0444] Moreover, diseases and/or disorders of the vas deferens include, but are not limited to, vasculititis and CBAVD (congenital bilateral absence of the vas deferens);

additionally, the polynucleotides, polypeptides, and agonists or antagonists of the present invention may be used in the diagnosis, treatment, and/or prevention of diseases and/or disorders of the seminal vesicles, including but not limited to, hydatid disease, congenital chloride diarrhea, and polycystic kidney disease.

[0445] Other disorders and/or diseases of the male reproductive system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, Klinefelter's syndrome, Young's syndrome, premature ejaculation, diabetes mellitus, cystic fibrosis, Kartagener's syndrome, high fever, multiple sclerosis, and gynecomastia.

[0446] Further, the polynucleotides, polypeptides, and agonists or antagonists of the present invention may be used in the diagnosis, treatment, and/or prevention of diseases and/or disorders of the vagina and vulva, including, but not limited to, bacterial vaginosis, candida vaginitis, herpes simplex virus, chancroid, granuloma inguinale, lymphogranuloma venereum, scabies, human papillomavirus, vaginal trauma, vulvar trauma, adenosis, chlamydia vaginitis, gonorrhea, trichomonas vaginitis, condyloma acuminatum, syphilis, molluscum contagiosum, atrophic vaginitis, Paget's disease, lichen sclerosus, lichen planus, vulvodynia, toxic shock syndrome, vaginismus, vulvovaginitis, vulvar vestibulitis, and neoplastic disorders, such as squamous cell hyperplasia, clear cell carcinoma, basal cell carcinoma, melanomas, cancer of Bartholin's gland, and vulvar intraepithelial neoplasia.

[0447] Disorders and/or diseases of the uterus that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, dysmenorrhea, retroverted uterus, endometriosis, fibroids, adenomyosis, anovulatory bleeding, amenorrhea, Cushing's syndrome, hydatidiform moles, Asherman's syndrome, premature menopause, precocious puberty, uterine polyps, dysfunctional uterine bleeding (e.g., due to aberrant hormonal signals), and neoplastic disorders, such as adenocarcinomas, keiomyosarcomas, and sarcomas. Additionally, the polypeptides, polynucleotides, or agonists or antagonists of the invention may be useful as a marker or detector of, as well as in the diagnosis, treatment, and/or prevention of congenital uterine abnormalities, such as bicornuate uterus, septate uterus, simple unicornuate uterus, unicornuate uterus with a noncavitary rudimentary horn, unicornuate uterus with a non-

communicating cavitary rudimentary horn, unicornuate uterus with a communicating cavitary horn, arcuate uterus, uterine didelfus, and T-shaped uterus.

[0448] Ovarian diseases and/or disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, anovulation, polycystic ovary syndrome (Stein-Leventhal syndrome), ovarian cysts, ovarian hypofunction, ovarian insensitivity to gonadotropins, ovarian overproduction of androgens, right ovarian vein syndrome, amenorrhea, hirutism, and ovarian cancer (including, but not limited to, primary and secondary cancerous growth, Sertoli-Leydig tumors, endometriod carcinoma of the ovary, ovarian papillary serous adenocarcinoma, ovarian mucinous adenocarcinoma, and Ovarian Krukenberg tumors).

[0449] Cervical diseases and/or disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, cervicitis, chronic cervicitis, mucopurulent cervicitis, cervical dysplasia, cervical polyps, Nabothian cysts, cervical erosion, cervical incompetence, and cervical neoplasms (including, for example, cervical carcinoma, squamous metaplasia, squamous cell carcinoma, adenosquamous cell neoplasia, and columnar cell neoplasia).

[0450] Additionally, diseases and/or disorders of the reproductive system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, disorders and/or diseases of pregnancy, including miscarriage and stillbirth, such as early abortion, late abortion, spontaneous abortion, induced abortion, therapeutic abortion, threatened abortion, missed abortion, incomplete abortion, complete abortion, habitual abortion, missed abortion, and septic abortion; ectopic pregnancy, anemia, Rh incompatibility, vaginal bleeding during pregnancy, gestational diabetes, intrauterine growth retardation, polyhydramnios, HELLP syndrome, abruptio placentae, placenta previa, hyperemesis, preeclampsia, eclampsia, herpes gestationis, and urticaria of pregnancy. Additionally, the polynucleotides, polypeptides, and agonists or antagonists of the present invention may be used in the diagnosis, treatment, and/or prevention of diseases that can complicate pregnancy, including heart disease, heart failure, rheumatic heart disease, congenital heart disease, mitral valve prolapse, high blood pressure, anemia, kidney disease, infectious disease (e.g., rubella, cytomegalovirus, toxoplasmosis, infectious hepatitis, chlamydia, HIV, AIDS, and genital herpes), diabetes mellitus,

Graves' disease, thyroiditis, hypothyroidism, Hashimoto's thyroiditis, chronic active hepatitis, cirrhosis of the liver, primary biliary cirrhosis, asthma, systemic lupus eryematosis, rheumatoid arthritis, myasthenia gravis, idiopathic thrombocytopenic purpura, appendicitis, ovarian cysts, gallbladder disorders,and obstruction of the intestine.

[0451] Complications associated with labor and parturition that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, premature rupture of the membranes, pre-term labor, post-term pregnancy, postmaturity, labor that progresses too slowly, fetal distress (e.g., abnormal heart rate (fetal or maternal), breathing problems, and abnormal fetal position), shoulder dystocia, prolapsed umbilical cord, amniotic fluid embolism, and aberrant uterine bleeding.

[0452] Further, diseases and/or disorders of the postdelivery period, that may be diagnosed, treated, and/or prevented with the compositions of the invention, include, but are not limited to, endometritis, myometritis, parametritis, peritonitis, pelvic thrombophlebitis, pulmonary embolism, endotoxemia, pyelonephritis, saphenous thrombophlebitis, mastitis, cystitis, postpartum hemorrhage, and inverted uterus.

[0453] Other disorders and/or diseases of the female reproductive system that may be diagnosed, treated, and/or prevented by the polynucleotides, polypeptides, and agonists or antagonists of the present invention include, but are not limited to, Turner's syndrome, pseudohermaphroditism, premenstrual syndrome, pelvic inflammatory disease, pelvic congestion (vascular engorgement), frigidity, anorgasmia, dyspareunia, ruptured fallopian tube, and Mittelschmerz.

Immune Activity

[0454] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing and/or prognosing diseases, disorders, and/or conditions of the immune system, by, for example, activating or inhibiting the proliferation, differentiation, or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called hematopoiesis, producing myeloid (platelets, red blood cells, neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells from pluripotent stem cells. The etiology of these immune diseases, disorders, and/or conditions may be genetic, somatic, such as cancer and some

autoimmune diseases, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

[0455] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to treat diseases and disorders of the immune system and/or to inhibit or enhance an immune response generated by cells associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1, column 7 (Tissue Distribution Library Code).

[0456] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing, and/or prognosing immunodeficiencies, including both congenital and acquired immunodeficiencies. Examples of B cell immunodeficiencies in which immunoglobulin levels B cell function and/or B cell numbers are decreased include: X-linked agammaglobulinemia (Bruton's disease), X-linked infantile agammaglobulinemia, X-linked immunodeficiency with hyper IgM, non X-linked immunodeficiency with hyper IgM, X-linked lymphoproliferative syndrome (XLP), agammaglobulinemia including congenital and acquired agammaglobulinemia, adult onset agammaglobulinemia, late-onset agammaglobulinemia, dysgammaglobulinemia, hypogammaglobulinemia, unspecified hypogammaglobulinemia, recessive agammaglobulinemia (Swiss type), Selective IgM deficiency, selective IgA deficiency, selective IgG subclass deficiencies, IgG subclass deficiency (with or without IgA deficiency), Ig deficiency with increased IgM, IgG and IgA deficiency with increased IgM, antibody deficiency with normal or elevated Igs, Ig heavy chain deletions, kappa chain deficiency, B cell lymphoproliferative disorder (BLPD), common variable immunodeficiency (CVID), common variable immunodeficiency (CVI) (acquired), and transient hypogammaglobulinemia of infancy.

[0457] In specific embodiments, ataxia-telangiectasia or conditions associated with ataxia-telangiectasia are treated, prevented, diagnosed, and/or prognosing using the polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof.

[0458] Examples of congenital immunodeficiencies in which T cell and/or B cell function and/or number is decreased include, but are not limited to: DiGeorge anomaly, severe combined immunodeficiencies (SCID) (including, but not limited to, X-linked SCID, autosomal recessive SCID, adenosine deaminase deficiency, purine nucleoside phosphorylase (PNP) deficiency, Class II MHC deficiency (Bare lymphocyte syndrome), Wiskott-Aldrich syndrome, and ataxia telangiectasia), thymic hypoplasia, third and fourth pharyngeal pouch syndrome, 22q11.2 deletion, chronic mucocutaneous candidiasis, natural killer cell deficiency (NK), idiopathic CD4+ T-lymphocytopenia, immunodeficiency with predominant T cell defect (unspecified), and unspecified immunodeficiency of cell mediated immunity.

[0459] In specific embodiments, DiGeorge anomaly or conditions associated with DiGeorge anomaly are treated, prevented, diagnosed, and/or prognosed using polypeptides or polynucleotides of the invention, or antagonists or agonists thereof.

[0460] Other immunodeficiencies that may be treated, prevented, diagnosed, and/or prognosed using polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof, include, but are not limited to, chronic granulomatous disease, Chédiak-Higashi syndrome, myeloperoxidase deficiency, leukocyte glucose-6-phosphate dehydrogenase deficiency, X-linked lymphoproliferative syndrome (XLP), leukocyte adhesion deficiency, complement component deficiencies (including C1, C2, C3, C4, C5, C6, C7, C8 and/or C9 deficiencies), reticular dysgenesis, thymic alymphoplasia-aplasia, immunodeficiency with thymoma, severe congenital leukopenia, dysplasia with immunodeficiency, neonatal neutropenia, short limbed dwarfism, and Nezelof syndrome-combined immunodeficiency with Igs.

[0461] In a preferred embodiment, the immunodeficiencies and/or conditions associated with the immunodeficiencies recited above are treated, prevented, diagnosed and/or prognosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0462] In a preferred embodiment polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used as an agent to boost immunoresponsiveness among immunodeficient individuals. In specific embodiments, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present

invention could be used as an agent to boost immunoresponsiveness among B cell and/or T cell immunodeficient individuals.

[0463] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, diagnosing and/or prognosing autoimmune disorders. Many autoimmune disorders result from inappropriate recognition of self as foreign material by immune cells. This inappropriate recognition results in an immune response leading to the destruction of the host tissue. Therefore, the administration of polynucleotides and polypeptides of the invention that can inhibit an immune response, particularly the proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing autoimmune disorders.

[0464] Autoimmune diseases or disorders that may be treated, prevented, diagnosed and/or prognosed by polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include, but are not limited to, one or more of the following: systemic lupus erythematosus, rheumatoid arthritis, ankylosing spondylitis, multiple sclerosis, autoimmune thyroiditis, Hashimoto's thyroiditis, autoimmune hemolytic anemia, hemolytic anemia, thrombocytopenia, autoimmune thrombocytopenia purpura, autoimmune neonatal thrombocytopenia, idiopathic thrombocytopenia purpura, purpura (e.g., Henloch-Scoenlein purpura), autoimmunocytopenia, Goodpasture's syndrome, Pemphigus vulgaris, myasthenia gravis, Grave's disease (hyperthyroidism), and insulin-resistant diabetes mellitus.

[0465] Additional disorders that are likely to have an autoimmune component that may be treated, prevented, and/or diagnosed with the compositions of the invention include, but are not limited to, type II collagen-induced arthritis, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, neuritis, uveitis ophthalmia, polyendocrinopathies, Reiter's Disease, Stiff-Man Syndrome, autoimmune pulmonary inflammation, autism, Guillain-Barre Syndrome, insulin dependent diabetes mellitus, and autoimmune inflammatory eye disorders.

[0466] Additional disorders that are likely to have an autoimmune component that may be treated, prevented, diagnosed and/or prognosed with the compositions of the invention include, but are not limited to, scleroderma with anti-collagen antibodies (often

characterized, e.g., by nucleolar and other nuclear antibodies), mixed connective tissue disease (often characterized, e.g., by antibodies to extractable nuclear antigens (e.g., ribonucleoprotein)), polymyositis (often characterized, e.g., by nonhistone ANA), pernicious anemia (often characterized, e.g., by antiparietal cell, microsomes, and intrinsic factor antibodies), idiopathic Addison's disease (often characterized, e.g., by humoral and cell-mediated adrenal cytotoxicity, infertility (often characterized, e.g., by antispermatozoal antibodies), glomerulonephritis (often characterized, e.g., by glomerular basement membrane antibodies or immune complexes), bullous pemphigoid (often characterized, e.g., by IgG and complement in basement membrane), Sjogren's syndrome (often characterized, e.g., by multiple tissue antibodies, and/or a specific nonhistone ANA (SS-B)), diabetes mellitus (often characterized, e.g., by cell-mediated and humoral islet cell antibodies), and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis) (often characterized, e.g., by beta-adrenergic receptor antibodies).

[0467] Additional disorders that may have an autoimmune component that may be treated, prevented, diagnosed and/or prognosed with the compositions of the invention include, but are not limited to, chronic active hepatitis (often characterized, e.g., by smooth muscle antibodies), primary biliary cirrhosis (often characterized, e.g., by mitochondria antibodies), other endocrine gland failure (often characterized, e.g., by specific tissue antibodies in some cases), vitiligo (often characterized, e.g., by melanocyte antibodies), vasculitis (often characterized, e.g., by Ig and complement in vessel walls and/or low serum complement), post-MI (often characterized, e.g., by myocardial antibodies), cardiotomy syndrome (often characterized, e.g., by myocardial antibodies), urticaria (often characterized, e.g., by IgG and IgM antibodies to IgE), atopic dermatitis (often characterized, e.g., by IgG and IgM antibodies to IgE), asthma (often characterized, e.g., by IgG and IgM antibodies to IgE), and many other inflammatory, granulomatous, degenerative, and atrophic disorders.

[0468] In a preferred embodiment, the autoimmune diseases and disorders and/or conditions associated with the diseases and disorders recited above are treated, prevented, diagnosed and/or prognosed using for example, antagonists or agonists, polypeptides or polynucleotides, or antibodies of the present invention. In a specific preferred

embodiment, rheumatoid arthritis is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0469] In another specific preferred embodiment, systemic lupus erythematosus is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention. In another specific preferred embodiment, idiopathic thrombocytopenia purpura is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0470] In another specific preferred embodiment IgA nephropathy is treated, prevented, and/or diagnosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0471] In a preferred embodiment, the autoimmune diseases and disorders and/or conditions associated with the diseases and disorders recited above are treated, prevented, diagnosed and/or prognosed using polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention.

[0472] In preferred embodiments, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a immunosuppressive agent(s).

[0473] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, prognosing, and/or diagnosing diseases, disorders, and/or conditions of hematopoietic cells. Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat or prevent those diseases, disorders, and/or conditions associated with a decrease in certain (or many) types hematopoietic cells, including but not limited to, leukopenia, neutropenia, anemia, and thrombocytopenia. Alternatively, Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention could be used to increase differentiation and proliferation of hematopoietic cells, including the pluripotent stem cells, in an effort to treat or prevent those diseases, disorders, and/or conditions associated with an increase in certain (or many) types of hematopoietic cells, including but not limited to, histiocytosis.

[0474] Allergic reactions and conditions, such as asthma (particularly allergic asthma) or other respiratory problems, may also be treated, prevented, diagnosed and/or prognosed using polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof. Moreover, these molecules can be used to treat, prevent, prognose, and/or diagnose anaphylaxis, hypersensitivity to an antigenic molecule, or blood group incompatibility.

[0475] Additionally, polypeptides or polynucleotides of the invention, and/or agonists or antagonists thereof, may be used to treat, prevent, diagnose and/or prognose IgE-mediated allergic reactions. Such allergic reactions include, but are not limited to, asthma, rhinitis, and eczema. In specific embodiments, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate IgE concentrations in vitro or in vivo.

[0476] Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention have uses in the diagnosis, prognosis, prevention, and/or treatment of inflammatory conditions. For example, since polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists of the invention may inhibit the activation, proliferation and/or differentiation of cells involved in an inflammatory response, these molecules can be used to prevent and/or treat chronic and acute inflammatory conditions. Such inflammatory conditions include, but are not limited to, for example, inflammation associated with infection (e.g., septic shock, sepsis, or systemic inflammatory response syndrome), ischemia-reperfusion injury, endotoxin lethality, complement-mediated hyperacute rejection, nephritis, cytokine or chemokine induced lung injury, inflammatory bowel disease, Crohn's disease, over production of cytokines (e.g., TNF or IL-1.), respiratory disorders (e.g., asthma and allergy); gastrointestinal disorders (e.g., inflammatory bowel disease); cancers (e.g., gastric, ovarian, lung, bladder, liver, and breast); CNS disorders (e.g., multiple sclerosis; ischemic brain injury and/or stroke, traumatic brain injury, neurodegenerative disorders (e.g., Parkinson's disease and Alzheimer's disease); AIDS-related dementia; and prion disease); cardiovascular disorders (e.g., atherosclerosis, myocarditis, cardiovascular disease, and cardiopulmonary bypass complications); as well as many additional diseases, conditions, and disorders that are characterized by inflammation (e.g., hepatitis, rheumatoid arthritis,

gout, trauma, pancreatitis, sarcoidosis, dermatitis, renal ischemia-reperfusion injury, Grave's disease, systemic lupus erythematosus, diabetes mellitus, and allogenic transplant rejection).

[0477] Because inflammation is a fundamental defense mechanism, inflammatory disorders can effect virtually any tissue of the body. Accordingly, polynucleotides, polypeptides, and antibodies of the invention, as well as agonists or antagonists thereof, have uses in the treatment of tissue-specific inflammatory disorders, including, but not limited to, adrenalitis, alveolitis, angiocholecystitis, appendicitis, balanitis, blepharitis, bronchitis, bursitis, carditis, cellulitis, cervicitis, cholecystitis, chorditis, cochlitis, colitis, conjunctivitis, cystitis, dermatitis, diverticulitis, encephalitis, endocarditis, esophagitis, eustachitis, fibrositis, folliculitis, gastritis, gastroenteritis, gingivitis, glossitis, hepatosplenitis, keratitis, labyrinthitis, laryngitis, lymphangitis, mastitis, media otitis, meningitis, metritis, mucitis, myocarditis, myosititis, myringitis, nephritis, neuritis, orchitis, osteochondritis, otitis, pericarditis, peritendonitis, peritonitis, pharyngitis, phlebitis, poliomyelitis, prostatitis, pulpitis, retinitis, rhinitis, salpingitis, scleritis, sclerochoroiditis, scrotitis, sinusitis, spondylitis, steatitis, stomatitis, synovitis, syringitis, tendonitis, tonsillitis, urethritis, and vaginitis.

[0478] In specific embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, are useful to diagnose, prognose, prevent, and/or treat organ transplant rejections and graft-versus-host disease. Organ rejection occurs by host immune cell destruction of the transplanted tissue through an immune response. Similarly, an immune response is also involved in GVHD, but, in this case, the foreign transplanted immune cells destroy the host tissues. Polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, that inhibit an immune response, particularly the activation, proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing organ rejection or GVHD. In specific embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, that inhibit an immune response, particularly the activation, proliferation, differentiation, or chemotaxis of T-cells, may be an effective therapy in preventing experimental allergic and hyperacute xenograft rejection.

[0479] In other embodiments, polypeptides, antibodies, or polynucleotides of the invention, and/or agonists or antagonists thereof, are useful to diagnose, prognose, prevent, and/or treat immune complex diseases, including, but not limited to, serum sickness, post streptococcal glomerulonephritis, polyarteritis nodosa, and immune complex-induced vasculitis.

[0480] Polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the invention can be used to treat, detect, and/or prevent infectious agents. For example, by increasing the immune response, particularly increasing the proliferation activation and/or differentiation of B and/or T cells, infectious diseases may be treated, detected, and/or prevented. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may also directly inhibit the infectious agent (refer to section of application listing infectious agents, etc), without necessarily eliciting an immune response.

[0481] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a vaccine adjuvant that enhances immune responsiveness to an antigen. In a specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance tumor-specific immune responses.

[0482] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-viral immune responses. Anti-viral immune responses that may be enhanced using the compositions of the invention as an adjuvant, include virus and virus associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a virus, disease, or symptom selected from the group consisting of: AIDS, meningitis, Dengue, EBV, and hepatitis (e.g., hepatitis B). In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to a virus, disease, or symptom selected from the group consisting of: HIV/AIDS, respiratory syncytial virus, Dengue, rotavirus, Japanese B encephalitis,

influenza A and B, parainfluenza, measles, cytomegalovirus, rabies, Junin, Chikungunya, Rift Valley Fever, herpes simplex, and yellow fever.

[0483] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-bacterial or anti-fungal immune responses. Anti-bacterial or anti-fungal immune responses that may be enhanced using the compositions of the invention as an adjuvant, include bacteria or fungus and bacteria or fungus associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a bacteria or fungus, disease, or symptom selected from the group consisting of: tetanus, Diphtheria, botulism, and meningitis type B.

[0484] In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to a bacteria or fungus, disease, or symptom selected from the group consisting of: *Vibrio cholerae, Mycobacterium leprae, Salmonella typhi, Salmonella paratyphi, Meisseria meningitidis, Streptococcus pneumoniae*, Group B streptococcus, *Shigella spp.*, Enterotoxigenic *Escherichia coli,* Enterohemorrhagic *E. coli*, and *Borrelia burgdorferi.*

[0485] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an adjuvant to enhance anti-parasitic immune responses. Anti-parasitic immune responses that may be enhanced using the compositions of the invention as an adjuvant, include parasite and parasite associated diseases or symptoms described herein or otherwise known in the art. In specific embodiments, the compositions of the invention are used as an adjuvant to enhance an immune response to a parasite. In another specific embodiment, the compositions of the invention are used as an adjuvant to enhance an immune response to Plasmodium (malaria) or Leishmania.

[0486] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed to treat infectious diseases including silicosis, sarcoidosis, and idiopathic pulmonary fibrosis; for example, by preventing the recruitment and activation of mononuclear phagocytes.

[0487] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an antigen for the generation of antibodies to inhibit or enhance immune mediated responses against polypeptides of the invention.

[0488] In one embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are administered to an animal (e.g., mouse, rat, rabbit, hamster, guinea pig, pigs, micro-pig, chicken, camel, goat, horse, cow, sheep, dog, cat, non-human primate, and human, most preferably human) to boost the immune system to produce increased quantities of one or more antibodies (e.g., IgG, IgA, IgM, and IgE), to induce higher affinity antibody production and immunoglobulin class switching (e.g., IgG, IgA, IgM, and IgE), and/or to increase an immune response.

[0489] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a stimulator of B cell responsiveness to pathogens.

[0490] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an activator of T cells.

[0491] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent that elevates the immune status of an individual prior to their receipt of immunosuppressive therapies.

[0492] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to induce higher affinity antibodies.

[0493] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to increase serum immunoglobulin concentrations.

[0494] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to accelerate recovery of immunocompromised individuals.

[0495] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among aged populations and/or neonates.

[0496] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an immune system enhancer prior to, during, or after bone marrow transplant and/or other transplants (e.g., allogeneic or xenogeneic organ transplantation). With respect to transplantation, compositions of the invention may be administered prior to, concomitant with, and/or after transplantation. In a specific embodiment, compositions of the invention are administered after transplantation, prior to the beginning of recovery of T-cell populations. In another specific embodiment, compositions of the invention are first administered after transplantation after the beginning of recovery of T cell populations, but prior to full recovery of B cell populations.

[0497] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among individuals having an acquired loss of B cell function. Conditions resulting in an acquired loss of B cell function that may be ameliorated or treated by administering the polypeptides, antibodies, polynucleotides and/or agonists or antagonists thereof, include, but are not limited to, HIV Infection, AIDS, bone marrow transplant, and B cell chronic lymphocytic leukemia (CLL).

[0498] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to boost immunoresponsiveness among individuals having a temporary immune deficiency. Conditions resulting in a temporary immune deficiency that may be ameliorated or treated by administering the polypeptides, antibodies, polynucleotides and/or agonists or antagonists thereof, include, but are not limited to, recovery from viral infections (e.g., influenza), conditions associated with malnutrition, recovery from infectious mononucleosis, or conditions associated with stress, recovery from measles, recovery from blood transfusion, and recovery from surgery.

[0499] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a regulator of antigen presentation by monocytes, dendritic cells, and/or B-cells. In one embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention enhance antigen presentation or antagonizes antigen presentation in vitro or in

vivo. Moreover, in related embodiments, said enhancement or antagonism of antigen presentation may be useful as an anti-tumor treatment or to modulate the immune system.

[0500] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as an agent to direct an individual's immune system towards development of a humoral response (i.e. TH2) as opposed to a TH1 cellular response.

[0501] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means to induce tumor proliferation and thus make it more susceptible to anti-neoplastic agents. For example, multiple myeloma is a slowly dividing disease and is thus refractory to virtually all anti-neoplastic regimens. If these cells were forced to proliferate more rapidly their susceptibility profile would likely change.

[0502] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a stimulator of B cell production in pathologies such as AIDS, chronic lymphocyte disorder and/or Common Variable Immunodificiency.

[0503] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for generation and/or regeneration of lymphoid tissues following surgery, trauma or genetic defect. In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used in the pretreatment of bone marrow samples prior to transplant.

[0504] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a gene-based therapy for genetically inherited disorders resulting in immuno-incompetence/immunodeficiency such as observed among SCID patients.

[0505] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of activating monocytes/macrophages to defend against parasitic diseases that effect monocytes such as Leishmania.

[0506] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of regulating secreted cytokines that are elicited by polypeptides of the invention.

[0507] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used in one or more of the applications decribed herein, as they may apply to veterinary medicine.

[0508] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of blocking various aspects of immune responses to foreign agents or self. Examples of diseases or conditions in which blocking of certain aspects of immune responses may be desired include autoimmune disorders such as lupus, and arthritis, as well as immunoresponsiveness to skin allergies, inflammation, bowel disease, injury and diseases/disorders associated with pathogens.

[0509] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for preventing the B cell proliferation and Ig secretion associated with autoimmune diseases such as idiopathic thrombocytopenic purpura, systemic lupus erythematosus and multiple sclerosis.

[0510] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a inhibitor of B and/or T cell migration in endothelial cells. This activity disrupts tissue architecture or cognate responses and is useful, for example in disrupting immune responses, and blocking sepsis.

[0511] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for chronic hypergammaglobulinemia evident in such diseases as monoclonal gammopathy of undetermined significance (MGUS), Waldenstrom's disease, related idiopathic monoclonal gammopathies, and plasmacytomas.

[0512] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed for instance to inhibit polypeptide chemotaxis and activation of macrophages and their precursors, and of neutrophils, basophils, B lymphocytes and some T-cell subsets, e.g., activated and CD8

cytotoxic T cells and natural killer cells, in certain autoimmune and chronic inflammatory and infective diseases. Examples of autoimmune diseases are described herein and include multiple sclerosis, and insulin-dependent diabetes.

[0513] The polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed to treat idiopathic hyper-eosinophilic syndrome by, for example, preventing eosinophil production and migration.

[0514] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used to enhance or inhibit complement mediated cell lysis.

[0515] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used to enhance or inhibit antibody dependent cellular cytotoxicity.

[0516] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may also be employed for treating atherosclerosis, for example, by preventing monocyte infiltration in the artery wall.

[0517] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed to treat adult respiratory distress syndrome (ARDS).

[0518] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be useful for stimulating wound and tissue repair, stimulating angiogenesis, and/or stimulating the repair of vascular or lymphatic diseases or disorders. Additionally, agonists and antagonists of the invention may be used to stimulate the regeneration of mucosal surfaces.

[0519] In a specific embodiment, polynucleotides or polypeptides, and/or agonists thereof are used to diagnose, prognose, treat, and/or prevent a disorder characterized by primary or acquired immunodeficiency, deficient serum immunoglobulin production, recurrent infections, and/or immune system dysfunction. Moreover, polynucleotides or polypeptides, and/or agonists thereof may be used to treat or prevent infections of the joints, bones, skin, and/or parotid glands, blood-borne infections (e.g., sepsis, meningitis, septic arthritis, and/or osteomyelitis), autoimmune diseases (e.g., those disclosed herein), inflammatory disorders, and malignancies, and/or any disease or disorder or condition

associated with these infections, diseases, disorders and/or malignancies) including, but not limited to, CVID, other primary immune deficiencies, HIV disease, CLL, recurrent bronchitis, sinusitis, otitis media, conjunctivitis, pneumonia, hepatitis, meningitis, herpes zoster (e.g., severe herpes zoster), and/or pneumocystis carnii. Other diseases and disorders that may be prevented, diagnosed, prognosed, and/or treated with polynucleotides or polypeptides, and/or agonists of the present invention include, but are not limited to, HIV infection, HTLV-BLV infection, lymphopenia, phagocyte bactericidal dysfunction anemia, thrombocytopenia, and hemoglobinuria.

[0520] In another embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention are used to treat, and/or diagnose an individual having common variable immunodeficiency disease ("CVID"; also known as "acquired agammaglobulinemia" and "acquired hypogammaglobulinemia") or a subset of this disease.

[0521] In a specific embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to diagnose, prognose, prevent, and/or treat cancers or neoplasms including immune cell or immune tissue-related cancers or neoplasms. Examples of cancers or neoplasms that may be prevented, diagnosed, or treated by polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include, but are not limited to, acute myelogenous leukemia, chronic myelogenous leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, acute lymphocytic anemia (ALL) Chronic lymphocyte leukemia, plasmacytomas, multiple myeloma, Burkitt's lymphoma, EBV-transformed diseases, and/or diseases and disorders described in the section entitled "Hyperproliferative Disorders" elsewhere herein.

[0522] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a therapy for decreasing cellular proliferation of Large B-cell Lymphomas.

[0523] In another specific embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are used as a means of decreasing the involvement of B cells and Ig associated with Chronic Myelogenous Leukemia.

[0524] In specific embodiments, the compositions of the invention are used as an agent to boost immunoresponsiveness among B cell immunodeficient individuals, such as, for example, an individual who has undergone a partial or complete splenectomy.

[0525] Antagonists of the invention include, for example, binding and/or inhibitory antibodies, antisense nucleic acids, ribozymes or soluble forms of the polypeptides of the present invention (e.g., Fc fusion protein; see, e.g., Example 9). Agonists of the invention include, for example, binding or stimulatory antibodies, and soluble forms of the polypeptides (e.g., Fc fusion proteins; see, e.g., Example 9). Polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention may be employed in a composition with a pharmaceutically acceptable carrier, e.g., as described herein.

[0526] In another embodiment, polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention are administered to an animal (including, but not limited to, those listed above, and also including transgenic animals) incapable of producing functional endogenous antibody molecules or having an otherwise compromised endogenous immune system, but which is capable of producing human immunoglobulin molecules by means of a reconstituted or partially reconstituted immune system from another animal (see, e.g., published PCT Application Nos. WO98/24893, WO/9634096, WO/9633735, and WO/9110741). Administration of polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention to such animals is useful for the generation of monoclonal antibodies against the polypeptides, antibodies, polynucleotides and/or agonists or antagonists of the present invention.

Blood-Related Disorders

[0527] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate hemostatic (the stopping of bleeding) or thrombolytic (clot dissolving) activity. For example, by increasing hemostatic or thrombolytic activity, polynucleotides or polypeptides, and/or agonists or antagonists of the present invention could be used to treat or prevent blood coagulation diseases, disorders, and/or conditions (e.g., afibrinogenemia, factor deficiencies, hemophilia), blood platelet diseases, disorders, and/or conditions (e.g., thrombocytopenia),

or wounds resulting from trauma, surgery, or other causes. Alternatively, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention that can decrease hemostatic or thrombolytic activity could be used to inhibit or dissolve clotting. These molecules could be important in the treatment or prevention of heart attacks (infarction), strokes, or scarring.

[0528] In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to prevent, diagnose, prognose, and/or treat thrombosis, arterial thrombosis, venous thrombosis, thromboembolism, pulmonary embolism, atherosclerosis, myocardial infarction, transient ischemic attack, unstable angina. In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used for the prevention of occulsion of saphenous grafts, for reducing the risk of periprocedural thrombosis as might accompany angioplasty procedures, for reducing the risk of stroke in patients with atrial fibrillation including nonrheumatic atrial fibrillation, for reducing the risk of embolism associated with mechanical heart valves and or mitral valves disease. Other uses for the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, include, but are not limited to, the prevention of occlusions in extrcorporeal devices (e.g., intravascular canulas, vascular access shunts in hemodialysis patients, hemodialysis machines, and cardiopulmonary bypass machines).

[0529] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to prevent, diagnose, prognose, and/or treat diseases and disorders of the blood and/or blood forming organs associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1, column 7 (Tissue Distribution Library Code).

[0530] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to modulate hematopoietic activity (the formation of blood cells). For example, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to increase the quantity of all or subsets of blood cells, such as, for example, erythrocytes, lymphocytes

(B or T cells), myeloid cells (e.g., basophils, eosinophils, neutrophils, mast cells, macrophages) and platelets. The ability to decrease the quantity of blood cells or subsets of blood cells may be useful in the prevention, detection, diagnosis and/or treatment of anemias and leukopenias described below. Alternatively, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to decrease the quantity of all or subsets of blood cells, such as, for example, erythrocytes, lymphocytes (B or T cells), myeloid cells (e.g., basophils, eosinophils, neutrophils, mast cells, macrophages) and platelets.. The ability to decrease the quantity of blood cells or subsets of blood cells may be useful in the prevention, detection, diagnosis and/or treatment of leukocytoses, such as, for example eosinophilia.

[0531] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be used to prevent, treat, or diagnose blood dyscrasia.

[0532] Anemias are conditions in which the number of red blood cells or amount of hemoglobin (the protein that carries oxygen) in them is below normal. Anemia may be caused by excessive bleeding, decreased red blood cell production, or increased red blood cell destruction (hemolysis). The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias. Anemias that may be treated prevented or diagnosed by the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include iron deficiency anemia, hypochromic anemia, microcytic anemia, chlorosis, hereditary siderob;astic anemia, idiopathic acquired sideroblastic anemia, red cell aplasia, megaloblastic anemia (e.g., pernicious anemia, (vitamin B12 deficiency) and folic acid deficiency anemia), aplastic anemia, hemolytic anemias (e.g., autoimmune helolytic anemia, microangiopathic hemolytic anemia, and paroxysmal nocturnal hemoglobinuria). The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias associated with diseases including but not limited to, anemias associated with systemic lupus erythematosus, cancers, lymphomas, chronic renal disease, and enlarged spleens. The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or

diagnosing anemias arising from drug treatments such as anemias associated with methyldopa, dapsone, and/or sulfadrugs. Additionally, rhe polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing anemias associated with abnormal red blood cell architecture including but not limited to, hereditary spherocytosis, hereditary elliptocytosis, glucose-6-phosphate dehydrogenase deficiency, and sickle cell anemia.

[0533] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing hemoglobin abnormalities, (e.g., those associated with sickle cell anemia, hemoglobin C disease, hemoglobin S-C disease, and hemoglobin E disease). Additionally, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating thalassemias, including, but not limited to major and minor forms of alpha-thalassemia and beta-thalassemia.

[0534] In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating bleeding disorders including, but not limited to, thrombocytopenia (e.g., idiopathic thrombocytopenic purpura, and thrombotic thrombocytopenic purpura), Von Willebrand's disease, hereditary platelet disorders (e.g., storage pool disease such as Chediak-Higashi and Hermansky-Pudlak syndromes, thromboxane A2 dysfunction, thromboasthenia, and Bernard-Soulier syndrome), hemolytic-uremic syndrome, hemophelias such as hemophelia A or Factor VII deficiency and Christmas disease or Factor IX deficiency, Hereditary Hemorhhagic Telangiectsia, also known as Rendu-Osler-Weber syndrome, allergic purpura (Henoch Schonlein purpura) and disseminated intravascular coagulation.

[0535] The effect of the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention on the clotting time of blood may be monitored using any of the clotting tests known in the art including, but not limited to, whole blood partial thromboplastin time (PTT), the activated partial thromboplastin time (aPTT), the activated clotting time (ACT), the recalcified activated clotting time, or the Lee-White Clotting time.

[0536] Several diseases and a variety of drugs can cause platelet dysfunction. Thus, in a specific embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating acquired platelet dysfunction such as platelet dysfunction accompanying kidney failure, leukemia, multiple myeloma, cirrhosis of the liver, and systemic lupus erythematosus as well as platelet dysfunction associated with drug treatments, including treatment with aspirin, ticlopidine, nonsteroidal anti-inflammatory drugs (used for arthritis, pain, and sprains), and penicillin in high doses.

[0537] In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders characterized by or associated with increased or decreased numbers of white blood cells. Leukopenia occurs when the number of white blood cells decreases below normal. Leukopenias include, but are not limited to, neutropenia and lymphocytopenia. An increase in the number of white blood cells compared to normal is known as leukocytosis. The body generates increased numbers of white blood cells during infection. Thus, leukocytosis may simply be a normal physiological parameter that reflects infection. Alternatively, leukocytosis may be an indicator of injury or other disease such as cancer. Leokocytoses, include but are not limited to, eosinophilia, and accumulations of macrophages. In specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating leukopenia. In other specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating leukocytosis

[0538] Leukopenia may be a generalized decreased in all types of white blood cells, or may be a specific depletion of particular types of white blood cells. Thus, in specific embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating decreases in neutrophil numbers, known as neutropenia. Neutropenias that may be diagnosed, prognosed, prevented, and/or treated by the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention include,

but are not limited to, infantile genetic agranulocytosis, familial neutropenia, cyclic neutropenia, neutropenias resulting from or associated with dietary deficiencies (e.g., vitamin B 12 deficiency or folic acid deficiency), neutropenias resulting from or associated with drug treatments (e.g., antibiotic regimens such as penicillin treatment, sulfonamide treatment, anticoagulant treatment, anticonvulsant drugs, anti-thyroid drugs, and cancer chemotherapy), and neutropenias resulting from increased neutrophil destruction that may occur in association with some bacterial or viral infections, allergic disorders, autoimmune diseases, conditions in which an individual has an enlarged spleen (e.g., Felty syndrome, malaria and sarcoidosis), and some drug treatment regimens.

[0539] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating lymphocytopenias (decreased numbers of B and/or T lymphocytes), including, but not limited lymphocytopenias resulting from or associated with stress, drug treatments (e.g., drug treatment with corticosteroids, cancer chemotherapies, and/or radiation therapies), AIDS infection and/or other diseases such as, for example, cancer, rheumatoid arthritis, systemic lupus erythematosus, chronic infections, some viral infections and/or hereditary disorders (e.g., DiGeorge syndrome, Wiskott-Aldrich Syndome, severe combined immunodeficiency, ataxia telangiectsia).

[0540] The polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders associated with macrophage numbers and/or macrophage function including, but not limited to, Gaucher's disease, Niemann-Pick disease, Letterer-Siwe disease and Hand-Schuller-Christian disease.

[0541] In another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders associated with eosinophil numbers and/or eosinophil function including, but not limited to, idiopathic hypereosinophilic syndrome, eosinophilia-myalgia syndrome, and Hand-Schuller-Christian disease.

[0542] In yet another embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing,

prognosing, preventing, and/or treating leukemias and lymphomas including, but not limited to, acute lymphocytic (lymphpblastic) leukemia (ALL), acute myeloid (myelocytic, myelogenous, myeloblastic, or myelomonocytic) leukemia, chronic lymphocytic leukemia (e.g., B cell leukemias, T cell leukemias, Sezary syndrome, and Hairy cell leukenia), chronic myelocytic (myeloid, myelogenous, or granulocytic) leukemia, Hodgkin's lymphoma, non-hodgkin's lymphoma, Burkitt's lymphoma, and mycosis fungoides.

[0543] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in diagnosing, prognosing, preventing, and/or treating diseases and disorders of plasma cells including, but not limited to, plasma cell dyscrasias, monoclonal gammaopathies, monoclonal gammopathies of undetermined significance, multiple myeloma, macroglobulinemia, Waldenstrom's macroglobulinemia, cryoglobulinemia, and Raynaud's phenomenon.

[0544] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in treating, preventing, and/or diagnosing myeloproliferative disorders, including but not limited to, polycythemia vera, relative polycythemia, secondary polycythemia, myelofibrosis, acute myelofibrosis, agnogenic myelod metaplasia, thrombocythemia, (including both primary and seconday thrombocythemia) and chronic myelocytic leukemia.

[0545] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as a treatment prior to surgery, to increase blood cell production.

[0546] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to enhance the migration, phagocytosis, superoxide production, antibody dependent cellular cytotoxicity of neutrophils, eosionophils and macrophages.

[0547] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to increase the number of stem cells in circulation prior to stem cells pheresis. In another specific embodiment, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists

of the present invention may be useful as an agent to increase the number of stem cells in circulation prior to platelet pheresis.

[0548] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful as an agent to increase cytokine production.

[0549] In other embodiments, the polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in preventing, diagnosing, and/or treating primary hematopoietic disorders.

Hyperproliferative Disorders

[0550] Ovarian associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, diagnose and/or prognose hyperproliferative diseases, disorders, and/or conditions, including neoplasms.

[0551] In a specific embodiment, ovarian associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, and/or diagnose hyperproliferative diseases, disorders, and/or conditions of the breast and ovaries.

[0552] In a preferred embodiment, ovarian associated polynucleotides or polypeptides, or agonists or antagonists thereof, can be used to treat, prevent, and/or diagnose breast and ovarian neoplasms.

[0553] Ovarian associated polynucleotides or polypeptides, or agonists or antagonists of the invention, may inhibit the proliferation of the disorder through direct or indirect interactions. Alternatively, ovarian associated polynucleotides or polypeptides, or agonists or antagonists thereof, may proliferate other cells, which can inhibit the hyperproliferative disorder.

[0554] For example, by increasing an immune response, particularly increasing antigenic qualities of the hyperproliferative disorder or by proliferating, differentiating, or mobilizing T-cells, hyperproliferative diseases, disorders, and/or conditions can be treated, prevented, and/or diagnosed. This immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, decreasing an immune response may also be a method of treating,

preventing, and/or diagnosing hyperproliferative diseases, disorders, and/or conditions, such as a chemotherapeutic agent.

[0555] Examples of hyperproliferative diseases, disorders, and/or conditions that can be treated, prevented, and/or diagnosed by ovarian associated polynucleotides or polypeptides, or agonists or antagonists thereof, include, but are not limited to neoplasms located in the: prostate, colon, abdomen, bone, breast, digestive system, liver, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous (central and peripheral), lymphatic system, pelvic, skin, soft tissue, spleen, thoracic, and urogenital.

[0556] Similarly, other hyperproliferative disorders can also be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention. Examples of such hyperproliferative disorders include, but are not limited to: Acute Childhood Lymphoblastic Leukemia, Acute Lymphoblastic Leukemia, Acute Lymphocytic Leukemia, Acute Myeloid Leukemia, Adrenocortical Carcinoma, Adult (Primary) Hepatocellular Cancer, Adult (Primary) Liver Cancer, Adult Acute Lymphocytic Leukemia, Adult Acute Myeloid Leukemia, Adult Hodgkin's Disease, Adult Hodgkin's Lymphoma, Adult Lymphocytic Leukemia, Adult Non-Hodgkin's Lymphoma, Adult Primary Liver Cancer, Adult Soft Tissue Sarcoma, AIDS-Related Lymphoma, AIDS-Related Malignancies, Anal Cancer, Astrocytoma, Bile Duct Cancer, Bladder Cancer, Bone Cancer, Brain Stem Glioma, Brain Tumors, Breast Cancer, Cancer of the Renal Pelvis and Ureter, Central Nervous System (Primary) Lymphoma, Central Nervous System Lymphoma, Cerebellar Astrocytoma, Cerebral Astrocytoma, Cervical Cancer, Childhood (Primary) Hepatocellular Cancer, Childhood (Primary) Liver Cancer, Childhood Acute Lymphoblastic Leukemia, Childhood Acute Myeloid Leukemia, Childhood Brain Stem Glioma, Childhood Cerebellar Astrocytoma, Childhood Cerebral Astrocytoma, Childhood Extracranial Germ Cell Tumors, Childhood Hodgkin's Disease, Childhood Hodgkin's Lymphoma, Childhood Hypothalamic and Visual Pathway Glioma, Childhood Lymphoblastic Leukemia, Childhood Medulloblastoma, Childhood Non-Hodgkin's Lymphoma, Childhood Pineal and Supratentorial Primitive Neuroectodermal Tumors, Childhood Primary Liver Cancer, Childhood Rhabdomyosarcoma, Childhood Soft Tissue Sarcoma, Childhood Visual Pathway and Hypothalamic Glioma, Chronic

Lymphocytic Leukemia, Chronic Myelogenous Leukemia, Colon Cancer, Cutaneous T-Cell Lymphoma, Endocrine Pancreas Islet Cell Carcinoma, Endometrial Cancer, Ependymoma, Epithelial Cancer, Esophageal Cancer, Ewing's Sarcoma and Related Tumors, Exocrine Pancreatic Cancer, Extracranial Germ Cell Tumor, Extragonadal Germ Cell Tumor, Extrahepatic Bile Duct Cancer, Eye Cancer, Female Breast Cancer, Gaucher's Disease, Gallbladder Cancer, Gastric Cancer, Gastrointestinal Carcinoid Tumor, Gastrointestinal Tumors, Germ Cell Tumors, Gestational Trophoblastic Tumor, Hairy Cell Leukemia, Head and Neck Cancer, Hepatocellular Cancer, Hodgkin's Disease, Hodgkin's Lymphoma, Hypergammaglobulinemia, Hypopharyngeal Cancer, Intestinal Cancers, Intraocular Melanoma, Islet Cell Carcinoma, Islet Cell Pancreatic Cancer, Kaposi's Sarcoma, Kidney Cancer, Laryngeal Cancer, Lip and Oral Cavity Cancer, Liver Cancer, Lung Cancer, Lymphoproliferative Disorders, Macroglobulinemia, Male Breast Cancer, Malignant Mesothelioma, Malignant Thymoma, Medulloblastoma, Melanoma, Mesothelioma, Metastatic Occult Primary Squamous Neck Cancer, Metastatic Primary Squamous Neck Cancer, Metastatic Squamous Neck Cancer, Multiple Myeloma, Multiple Myeloma/Plasma Cell Neoplasm, Myelodysplastic Syndrome, Myelogenous Leukemia, Myeloid Leukemia, Myeloproliferative Disorders, Nasal Cavity and Paranasal Sinus Cancer, Nasopharyngeal Cancer, Neuroblastoma, Non-Hodgkin's Lymphoma During Pregnancy, Nonmelanoma Skin Cancer, Non-Small Cell Lung Cancer, Occult Primary Metastatic Squamous Neck Cancer, Oropharyngeal Cancer, Osteo-/Malignant Fibrous Sarcoma, Osteosarcoma/Malignant Fibrous Histiocytoma, Osteosarcoma/Malignant Fibrous Histiocytoma of Bone, Ovarian Epithelial Cancer, Ovarian Germ Cell Tumor, Ovarian Low Malignant Potential Tumor, Pancreatic Cancer, Paraproteinemias, Purpura, Parathyroid Cancer, Penile Cancer, Pheochromocytoma, Pituitary Tumor, Plasma Cell Neoplasm/Multiple Myeloma, Primary Central Nervous System Lymphoma, Primary Liver Cancer, Prostate Cancer, Rectal Cancer, Renal Cell Cancer, Renal Pelvis and Ureter Cancer, Retinoblastoma, Rhabdomyosarcoma, Salivary Gland Cancer, Sarcoidosis Sarcomas, Sezary Syndrome, Skin Cancer, Small Cell Lung Cancer, Small Intestine Cancer, Soft Tissue Sarcoma, Squamous Neck Cancer, Stomach Cancer, Supratentorial Primitive Neuroectodermal and Pineal Tumors, T-Cell Lymphoma, Testicular Cancer, Thymoma, Thyroid Cancer, Transitional Cell Cancer of the Renal Pelvis and Ureter,

Transitional Renal Pelvis and Ureter Cancer, Trophoblastic Tumors, Ureter and Renal Pelvis Cell Cancer, Urethral Cancer, Uterine Cancer, Uterine Sarcoma, Vaginal Cancer, Visual Pathway and Hypothalamic Glioma, Vulvar Cancer, Waldenstrom's Macroglobulinemia, Wilms' Tumor, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

[0557] In another preferred embodiment, polynucleotides or polypeptides, or agonists or antagonists of the present invention are used to diagnose, prognose, prevent, and/or treat premalignant conditions and to prevent progression to a neoplastic or malignant state, including but not limited to those disorders described above. Such uses are indicated in conditions known or suspected of preceding progression to neoplasia or cancer, in particular, where non-neoplastic cell growth consisting of hyperplasia, metaplasia, or most particularly, dysplasia has occurred (for review of such abnormal growth conditions, see Robbins and Angell, 1976, Basic Pathology, 2d.Ed., W. B. Saunders Co., Philadelphia, pp. 68-79.)

[0558] Hyperplasia is a form of controlled cell proliferation, involving an increase in cell number in a tissue or organ, without significant alteration in structure or function. Hyperplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, angiofollicular mediastinal lymph node hyperplasia, angiolymphoid hyperplasia with eosinophilia, atypical melanocytic hyperplasia, basal cell hyperplasia, benign giant lymph node hyperplasia, cementum hyperplasia, congenital adrenal hyperplasia, congenital sebaceous hyperplasia, cystic hyperplasia, cystic hyperplasia of the breast, denture hyperplasia, ductal hyperplasia, endometrial hyperplasia, fibromuscular hyperplasia, focal epithelial hyperplasia, gingival hyperplasia, inflammatory fibrous hyperplasia, inflammatory papillary hyperplasia, intravascular papillary endothelial hyperplasia, nodular hyperplasia of prostate, nodular regenerative hyperplasia, pseudoepitheliomatous hyperplasia, senile sebaceous hyperplasia, and verrucous hyperplasia.

[0559] Metaplasia is a form of controlled cell growth in which one type of adult or fully differentiated cell substitutes for another type of adult cell. Metaplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the

invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, agnogenic myeloid metaplasia, apocrine metaplasia, atypical metaplasia, autoparenchymatous metaplasia, connective tissue metaplasia, epithelial metaplasia, intestinal metaplasia, metaplastic anemia, metaplastic ossification, metaplastic polyps, myeloid metaplasia, primary myeloid metaplasia, secondary myeloid metaplasia, squamous metaplasia, squamous metaplasia of amnion, and symptomatic myeloid metaplasia.

[0560] Dysplasia is frequently a forerunner of cancer, and is found mainly in the epithelia; it is the most disorderly form of non-neoplastic cell growth, involving a loss in individual cell uniformity and in the architectural orientation of cells. Dysplastic cells often have abnormally large, deeply stained nuclei, and exhibit pleomorphism. Dysplasia characteristically occurs where there exists chronic irritation or inflammation. Dysplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, anhidrotic ectodermal dysplasia, anterofacial dysplasia, asphyxiating thoracic dysplasia, atriodigital dysplasia, bronchopulmonary dysplasia, cerebral dysplasia, cervical dysplasia, chondroectodermal dysplasia, cleidocranial dysplasia, congenital ectodermal dysplasia, craniodiaphysial dysplasia, craniocarpotarsal dysplasia, craniometaphysial dysplasia, dentin dysplasia, diaphysial dysplasia, ectodermal dysplasia, enamel dysplasia, encephalo-ophthalmic dysplasia, dysplasia epiphysialis hemimelia, dysplasia epiphysialis multiplex, dysplasia epiphysialis punctata, epithelial dysplasia, faciodigitogenital dysplasia, familial fibrous dysplasia of jaws, familial white folded dysplasia, fibromuscular dysplasia, fibrous dysplasia of bone, florid osseous dysplasia, hereditary renal-retinal dysplasia, hidrotic ectodermal dysplasia, hypohidrotic ectodermal dysplasia, lymphopenic thymic dysplasia, mammary dysplasia, mandibulofacial dysplasia, metaphysial dysplasia, Mondini dysplasia, monostotic fibrous dysplasia, mucoepithelial dysplasia, multiple epiphysial dysplasia, oculoauriculovertebral dysplasia, oculodentodigital dysplasia, oculovertebral dysplasia, odontogenic dysplasia, ophthalmomandibulomelic dysplasia, periapical cemental dysplasia, polyostotic fibrous dysplasia, pseudoachondroplastic spondyloepiphysial dysplasia, retinal dysplasia, septo-optic dysplasia, spondyloepiphysial dysplasia, and ventriculoradial dysplasia.

[0561] Additional pre-neoplastic disorders which can be diagnosed, prognosed, prevented, and/or treated with compositions of the invention (including polynucleotides, polypeptides, agonists or antagonists) include, but are not limited to, benign dysproliferative disorders (e.g., benign tumors, fibrocystic conditions, tissue hypertrophy, intestinal polyps, colon polyps, and esophageal dysplasia), leukoplakia, keratoses, Bowen's disease, Farmer's Skin, solar cheilitis, and solar keratosis.

[0562] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose and/or prognose disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1, 7 (Tissue Distribution Library Code).

[0563] In another embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention conjugated to a toxin or a radioactive isotope, as described herein, may be used to treat cancers and neoplasms, including, but not limited to those described herein. In a further preferred embodiment, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention conjugated to a toxin or a radioactive isotope, as described herein, may be used to treat acute myelogenous leukemia.

[0564] Additionally, polynucleotides, polypeptides, and/or agonists or antagonists of the invention may affect apoptosis, and therefore, would be useful in treating a number of diseases associated with increased cell survival or the inhibition of apoptosis. For example, diseases associated with increased cell survival or the inhibition of apoptosis that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma, breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's

disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection.

[0565] In preferred embodiments, polynucleotides, polypeptides, and/or agonists or antagonists of the invention are used to inhibit growth, progression, and/or metastasis of cancers, in particular those listed above.

[0566] Additional diseases or conditions associated with increased cell survival that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, emangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

[0567] Diseases associated with increased apoptosis that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, amyotrophic lateral sclerosis, retinitis pigmentosa, cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestosis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

[0568] Hyperproliferative diseases and/or disorders that could be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention, include, but are not limited to, neoplasms located in the liver, abdomen, bone, breast, digestive system, pancreas, peritoneum, endocrine glands (adrenal, parathyroid, pituitary, testicles, ovary, thymus, thyroid), eye, head and neck, nervous system (central and peripheral), lymphatic system, pelvis, skin, soft tissue, spleen, thorax, and urogenital tract.

[0569] Similarly, other hyperproliferative disorders can also be diagnosed, prognosed, prevented, and/or treated by polynucleotides, polypeptides, and/or agonists or antagonists of the invention. Examples of such hyperproliferative disorders include, but are not limited to: hypergammaglobulinemia, lymphoproliferative disorders, paraproteinemias, purpura, sarcoidosis, Sezary Syndrome, Waldenstron's macroglobulinemia, Gaucher's Disease, histiocytosis, and any other hyperproliferative disease, besides neoplasia, located in an organ system listed above.

[0570] One preferred embodiment utilizes polynucleotides of the present invention to inhibit aberrant cellular division, by gene therapy using the present invention, and/or protein fusions or fragments thereof.

[0571] Thus, the present invention provides a method for treating cell proliferative diseases, disorders, and/or conditions by inserting into an abnormally proliferating cell a polynucleotide of the present invention, wherein said polynucleotide represses said cell proliferation, disease, disorder, and/or condition.

[0572] In a preferred embodiment, the present invention provides a method for treating cell proliferative diseases, disorders and/or conditions of the breast and ovaries by inserting into a cell, a polynucleotide of the present invention, wherein said polynucleotide represses said cell proliferation, disease and/or disorder.

[0573] Another embodiment of the present invention provides a method of treating cell-proliferative diseases, disorders, and/or conditions in individuals comprising administration of one or more active gene copies of the present invention to an abnormally proliferating cell or cells. In a preferred embodiment, polynucleotides of the present invention is a DNA construct comprising a recombinant expression vector effective in expressing a DNA sequence encoding said polynucleotides. In another preferred embodiment of the present invention, the DNA construct encoding the polynucleotides of the present invention is inserted into cells to be treated utilizing a retrovirus, or more preferably an adenoviral vector (see, e.g., G J. Nabel, et. al., PNAS 96: 324-326 (1999), which is hereby incorporated by reference). In a most preferred embodiment, the viral vector is defective and will not transform non-proliferating cells, only proliferating cells. Moreover, in a preferred embodiment, the polynucleotides of the present invention inserted into proliferating cells either alone, or in combination with or fused to other polynucleotides, can then be modulated via an external stimulus (i.e., magnetic, specific small molecule, chemical, or drug administration, etc.), which acts upon the promoter upstream of said polynucleotides to induce expression of the encoded protein product. As such the beneficial therapeutic affect of the present invention may be expressly modulated (i.e., to increase, decrease, or inhibit expression of the present invention) based upon said external stimulus.

[0574] Polynucleotides of the present invention may be useful in repressing expression of oncogenic genes or antigens. By "repressing expression of the oncogenic genes " is intended the suppression of the transcription of the gene, the degradation of the gene transcript (pre-message RNA), the inhibition of splicing, the destruction of the

messenger RNA, the prevention of the post-translational modifications of the protein, the destruction of the protein, or the inhibition of the normal function of the protein.

[0575] For local administration to abnormally proliferating cells, polynucleotides of the present invention may be administered by any method known to those of skill in the art including, but not limited to transfection, electroporation, microinjection of cells, or in vehicles such as liposomes, lipofectin, or as naked polynucleotides, or any other method described throughout the specification. The polynucleotide of the present invention may be delivered by known gene delivery systems such as, but not limited to, retroviral vectors (Gilboa, J. Virology 44:845 (1982); Hocke, Nature 320:275 (1986); Wilson, et al., Proc. Natl. Acad. Sci. U.S.A. 85:3014), vaccinia virus system (Chakrabarty et al., Mol. Cell Biol. 5:3403 (1985) or other efficient DNA delivery systems (Yates et al., Nature 313:812 (1985)) known to those skilled in the art. These references are exemplary only and are hereby incorporated by reference. In order to specifically deliver or transfect cells which are abnormally proliferating and spare non-dividing cells, it is preferable to utilize a retrovirus, or adenoviral (as described in the art and elsewhere herein) delivery system known to those of skill in the art. Since host DNA replication is required for retroviral DNA to integrate and the retrovirus will be unable to self replicate due to the lack of the retrovirus genes needed for its life cycle. Utilizing such a retroviral delivery system for polynucleotides of the present invention will target said gene and constructs to abnormally proliferating cells and will spare the non-dividing normal cells.

[0576] The polynucleotides of the present invention may be delivered directly to cell proliferative disorder/disease sites in internal organs, body cavities and the like by use of imaging devices used to guide an injecting needle directly to the disease site. The polynucleotides of the present invention may also be administered to disease sites at the time of surgical intervention.

[0577] By "cell proliferative disease" is meant any human or animal disease or disorder, affecting any one or any combination of organs, cavities, or body parts, which is characterized by single or multiple local abnormal proliferations of cells, groups of cells, or tissues, whether benign or malignant.

[0578] Any amount of the polynucleotides of the present invention may be administered as long as it has a biologically inhibiting effect on the proliferation of the

treated cells. Moreover, it is possible to administer more than one of the polynucleotide of the present invention simultaneously to the same site. By "biologically inhibiting" is meant partial or total growth inhibition as well as decreases in the rate of proliferation or growth of the cells. The biologically inhibitory dose may be determined by assessing the effects of the polynucleotides of the present invention on target malignant or abnormally proliferating cell growth in tissue culture, tumor growth in animals and cell cultures, or any other method known to one of ordinary skill in the art.

[0579] The present invention is further directed to antibody-based therapies which involve administering of anti-polypeptides and anti-polynucleotide antibodies to a mammalian, preferably human, patient for treating one or more of the described diseases, disorders, and/or conditions. Methods for producing anti-polypeptides and anti-polynucleotide antibodies polyclonal and monoclonal antibodies are described in detail elsewhere herein. Such antibodies may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

[0580] A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g., as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

[0581] In particular, the antibodies, fragments and derivatives of the present invention are useful for treating a subject having or developing cell proliferative and/or differentiation diseases, disorders, and/or conditions as described herein. Such treatment comprises administering a single or multiple doses of the antibody, or a fragment, derivative, or a conjugate thereof.

[0582] The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors, for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

[0583] It is preferred to use high affinity and/or potent *in vivo* inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of diseases, disorders, and/or conditions related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides, including fragments thereof. Preferred binding affinities include those with a dissociation constant or Kd less than $5X10^{-6}M$, $10^{-6}M$, $5X10^{-7}M$, $10^{-7}M$, $5X10^{-8}M$, $10^{-8}M$, $5X10^{-9}M$, $10^{-9}M$, $5X10^{-10}M$, $10^{-10}M$, $5X10^{-11}M$, $10^{-11}M$, $5X10^{-12}M$, $10^{-12}M$, $5X10^{-13}M$, $10^{-13}M$, $5X10^{-14}M$, $10^{-14}M$, $5X10^{-15}M$, and $10^{-15}M$.

[0584] Moreover, ovarian antigen polypeptides of the present invention or fragments thereof, are useful in inhibiting the angiogenesis of proliferative cells or tissues, either alone, as a protein fusion, or in combination with other polypeptides directly or indirectly, as described elsewhere herein. In a most preferred embodiment, said anti-angiogenesis effect may be achieved indirectly, for example, through the inhibition of hematopoietic, tumor-specific cells, such as tumor-associated macrophages (see, e.g., Joseph IB, et al. J Natl Cancer Inst, 90(21):1648-53 (1998), which is hereby incorporated by reference). Antibodies directed to polypeptides or polynucleotides of the present invention may also result in inhibition of angiogenesis directly, or indirectly (see, e.g., Witte L, et al., Cancer Metastasis Rev. 17(2):155-61 (1998), which is hereby incorporated by reference)).

[0585] Polypeptides, including protein fusions, of the present invention, or fragments thereof may be useful in inhibiting proliferative cells or tissues through the induction of apoptosis. Said polypeptides may act either directly, or indirectly to induce apoptosis of proliferative cells and tissues, for example in the activation of a death-domain receptor, such as tumor necrosis factor (TNF) receptor-1, CD95 (Fas/APO-1), TNF-receptor-related apoptosis-mediated protein (TRAMP) and TNF-related apoptosis-inducing ligand (TRAIL) receptor-1 and -2 (see, e.g., Schulze-Osthoff K, et.al., Eur J Biochem 254(3):439-59 (1998), which is hereby incorporated by reference). Moreover, in another preferred embodiment of the present invention, said polypeptides may induce apoptosis through other mechanisms, such as in the activation of other proteins which will

activate apoptosis, or through stimulating the expression of said proteins, either alone or in combination with small molecule drugs or adjuvants, such as apoptonin, galectins, thioredoxins, antiinflammatory proteins (See for example, Mutat. Res. 400(1-2):447-55 (1998), Med Hypotheses.50(5):423-33 (1998), Chem. Biol. Interact. Apr 24;111-112:23-34 (1998), J. Mo. Med. 76(6):402-12 (1998), Int. J. Tissue React. 20(1):3-15 (1998), which are all hereby incorporated by reference).

[0586] Polypeptides, including protein fusions to, or fragments thereof, of the present invention are useful in inhibiting the metastasis of proliferative cells or tissues. Inhibition may occur as a direct result of administering polypeptides, or antibodies directed to said polypeptides as described elsewhere herein, or indirectly, such as activating the expression of proteins known to inhibit metastasis, for example alpha 4 integrins, (See, e.g., Curr Top Microbiol Immunol 1998;231:125-41, which is hereby incorporated by reference). Such therapeutic affects of the present invention may be achieved either alone, or in combination with small molecule drugs or adjuvants.

[0587] In another embodiment, the invention provides a method of delivering compositions containing the polypeptides of the invention (e.g., compositions containing polypeptides or anti-ovarian antigen polypeptide antibodies associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs) to targeted cells expressing the polypeptide of the present invention. Ovarian antigen polypeptides or anti- ovarian antigen polypeptide antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions.

[0588] Polypeptides, protein fusions to, or fragments thereof, of the present invention are useful in enhancing the immunogenicity and/or antigenicity of proliferating cells or tissues, either directly, such as would occur if the polypeptides of the present invention 'vaccinated' the immune response to respond to proliferative antigens and immunogens, or indirectly, such as in activating the expression of proteins known to enhance the immune response (e.g. chemokines), to said antigens and immunogens.

Urinary System Disorders

[0589] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders of the urinary system, including but not limited to disorders of the renal system, bladder, ureters, and urethra. Renal disorders include, but are not limited to, kidney failure, nephritis, blood vessel disorders of kidney, metabolic and congenital kidney disorders, urinary disorders of the kidney, autoimmune disorders, sclerosis and necrosis, electrolyte imbalance, and kidney cancers.

[0590] Kidney failure diseases include, but are not limited to, acute kidney failure, chronic kidney failure, atheroembolic renal failure, and end-stage renal disease. Inflammatory diseases of the kidney include acute glomerulonephritis, postinfectious glomerulonephritis, rapidly progressive glomerulonephritis, nephrotic syndrome, membranous glomerulonephritis, familial nephrotic syndrome, membranoproliferative glomerulonephritis I and II, mesangial proliferative glomerulonephritis, chronic glomerulonephritis, acute tubulointerstitial nephritis, chronic tubulointerstitial nephritis, acute post-streptococcal glomerulonephritis (PSGN), pyelonephritis, lupus nephritis, chronic nephritis, interstitial nephritis, and post-streptococcal glomerulonephritis.

[0591] Blood vessel disorders of the kidneys include, but are not limited to, kidney infarction, atheroembolic kidney disease, cortical necrosis, malignant nephrosclerosis, renal vein thrombosis, renal underperfusion, renal ischemia-reperfusion, renal artery embolism, and renal artery stenosis. Kidney disorders resulting form urinary tract problems include, but are not limited to, pyelonephritis, hydronephrosis, urolithiasis (renal lithiasis, nephrolithiasis), reflux nephropathy, urinary tract infections, urinary retention, and acute or chronic unilateral obstructive uropathy.

[0592] Metabolic and congenital disorders of the kidneys include, but are not limited to, renal tubular acidosis, renal glycosuria, nephrogenic diabetes insipidus, cystinuria, Fanconi's syndrome, vitamin D-resistant rickets, Hartnup disease, Bartter's syndrome, Liddle's syndrome, polycystic kidney disease, medullary cystic disease, medullary sponge kidney, Alport's syndrome, nail-patella syndrome, congenital nephrotic syndrome, CRUSH syndrome, horseshoe kidney, diabetic nephropathy, nephrogenic diabetes insipidus, analgesic nephropathy, kidney stones, and membranous nephropathy, Kidney disorders resulting from an autoimmune response include, but are not limited to,

systemic lupus erythematosus (SLE), Goodpasture syndrome, IgA nephropathy, and IgM mesangial proliferative glomerulonephritis.

[0593] Sclerotic or necrotic disorders of the kidney include, but are not limited to, glomerulosclerosis, diabetic nephropathy, focal segmental glomerulosclerosis (FSGS), necrotizing glomerulonephritis, and renal papillary necrosis. Kidneys may also develop carcinomas, including, but not limited to, hypernephroma, nephroblastoma, renal cell cancer, transitional cell cancer, squamous cell cancer, and Wilm's tumor.

[0594] Kidney disorders may also result in electrolyte imbalances, including, but not limited to, nephrocalcinosis, pyuria, edema, hydronephritis, proteinuria, hyponatremia, hypernatremia, hypokalemia, hyperkalemia, hypocalcemia, hypercalcemia, hypophosphatemia, and hyperphosphatemia.

[0595] Bladder disorders include, but are not limited to, benign prostatic hyperplasia (BPH), interstitial cystitis (IC), prostatitis, proteinuria, urinary tract infections, urinary incontinence, urinary retention. Disorders of the ureters and urethra include, but are not limited to, acute or chronic unilateral obstructive uropathy. The bladder, ureters, and urethra may also develop carcinomas, including, but not limited to, superficial bladder canccer, invasive bladder cancer, carcinoma of the ureter, and urethra cancers.

[0596] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

Cardiovascular Disorders

[0597] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose cardiovascular disorders, including, but not limited to, peripheral artery disease, such as limb ischemia.

[0598] Cardiovascular disorders include cardiovascular abnormalities, such as arterio-arterial fistula, arteriovenous fistula, cerebral arteriovenous malformations, congenital heart defects, pulmonary atresia, and Scimitar Syndrome. Congenital heart defects include aortic coarctation, cor triatriatum, coronary vessel anomalies, crisscross heart, dextrocardia, patent ductus arteriosus, Ebstein's anomaly, Eisenmenger complex, hypoplastic left heart syndrome, levocardia, tetralogy of fallot, transposition of great vessels, double outlet right ventricle, tricuspid atresia, persistent truncus arteriosus, total anomalous pulmonary venous connection, hypoplastic left heart syndrome, and heart septal defects, such as aortopulmonary septal defect, endocardial cushion defects, Lutembacher's Syndrome, atrioventricular canal defect, trilogy of Fallot, ventricular heart septal defects.

[0599] Cardiovascular disorders also include heart disease, such as arrhythmias, carcinoid heart disease, high cardiac output, low cardiac output, cardiac tamponade, endocarditis (including bacterial), heart aneurysm, cardiac arrest, sudden cardiac death, congestive heart failure, congestive cardiomyopathy, paroxysmal dyspnea, cardiac edema, heart hypertrophy, congestive cardiomyopathy, left ventricular hypertrophy, right ventricular hypertrophy, post-infarction heart rupture, ventricular septal rupture, heart valve diseases, myocardial diseases, myocardial ischemia, pericardial effusion, pericarditis (including constrictive and tuberculous), pneumopericardium, postpericardiotomy syndrome, pulmonary heart disease, rheumatic heart disease, ventricular dysfunction, hyperemia, cardiovascular pregnancy complications, Scimitar Syndrome, diastolic dysfunction, enlarged heart, heart block, J-curve phenomenon, rheumatic heart disease, Marfan syndrome, cardiovascular syphilis, and cardiovascular tuberculosis.

[0600] Arrhythmias include sinus arrhythmia, atrial fibrillation, atrial flutter, bradycardia, extrasystole, Adams-Stokes Syndrome, bundle-branch block, sinoatrial block, long QT syndrome, parasystole, Lown-Ganong-Levine Syndrome, Mahaim-type pre-excitation syndrome, Wolff-Parkinson-White syndrome, sick sinus syndrome, tachycardias, and ventricular fibrillation. Tachycardias include paroxysmal tachycardia, supraventricular tachycardia, accelerated idioventricular rhythm, atrioventricular nodal reentry tachycardia, ectopic atrial tachycardia, ectopic junctional tachycardia, sinoatrial

nodal reentry tachycardia, sinus tachycardia, Torsades de Pointes, and ventricular tachycardia.

[0601] Heart valve disease include aortic valve insufficiency, aortic valve stenosis, heart murmurs, aortic valve prolapse, mitral valve prolapse, tricuspid valve prolapse, mitral valve insufficiency, mitral valve stenosis, pulmonary atresia, pulmonary valve insufficiency, pulmonary valve stenosis, tricuspid atresia, tricuspid valve insufficiency, tricuspid valve stenosis, and bicuspid aortic valve.

[0602] Myocardial diseases include alcoholic cardiomyopathy, congestive cardiomyopathy, hypertrophic cardiomyopathy, aortic subvalvular stenosis, pulmonary subvalvular stenosis, restrictive cardiomyopathy, Chagas cardiomyopathy, endocardial fibroelastosis, endomyocardial fibrosis, Kearns Syndrome, Barth syndrome, myocardial reperfusion injury, and myocarditis.

[0603] Myocardial ischemias include coronary disease, such as angina pectoris, Prinzmetal's angina, unstable angina, coronary aneurysm, coronary arteriosclerosis, coronary thrombosis, coronary vasospasm, myocardial infarction and myocardial stunning.

[0604] Cardiovascular diseases also include vascular diseases such as aneurysms, angiodysplasia, angiomatosis, bacillary angiomatosis, Hippel-Lindau Disease, Klippel-Trenaunay-Weber Syndrome, Sturge-Weber Syndrome, angioneurotic edema, aortic diseases, Takayasu's Arteritis, aortitis, Leriche's Syndrome, arterial occlusive diseases, arteritis, enarteritis, polyarteritis nodosa, cerebrovascular disorders, diabetic angiopathies, diabetic retinopathy, embolisms, thrombosis, erythromelalgia, hemorrhoids, hepatic veno-occlusive disease, hypertension, hypotension (shock), ischemia, peripheral vascular diseases, phlebitis, superficial phlebitis, pulmonary veno-occlusive disease, chronic obstructive pulmonary disease, Buerger's disease, Raynaud's disease, CREST syndrome, retinal vein occlusion, Scimitar syndrome, superior vena cava syndrome, telangiectasia, atacia telangiectasia, hereditary hemorrhagic telangiectasia, deep vein thrombosis, varicocele, varicose veins, varicose ulcer, vasculitis, and venous insufficiency.

[0605] Aneurysms include dissecting aneurysms, false aneurysms, infected aneurysms, ruptured aneurysms, aortic aneurysms, cerebral aneurysms, coronary aneurysms, heart aneurysms, and iliac aneurysms.

[0606] Arterial occlusive diseases include arteriosclerosis, arteriolosclerosis, atherosclerosis, intermittent claudication, carotid stenosis, fibromuscular dysplasias, mesenteric vascular occlusion, Moyamoya disease, renal artery obstruction, retinal artery occlusion, and thromboangiitis obliterans.

[0607] Cerebrovascular disorders include carotid artery diseases, cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformation, cerebral artery diseases, cerebral embolism and thrombosis, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, cerebral hemorrhage, epidural hematoma, subdural hematoma, subaraxhnoid hemorrhage, cerebral infarction, cerebral ischemia (including transient), subclavian steal syndrome, periventricular leukomalacia, vascular headache, cluster headache, migraine, and vertebrobasilar insufficiency.

[0608] Embolisms include air embolisms, amniotic fluid embolisms, cholesterol embolisms, blue toe syndrome, fat embolisms, pulmonary embolisms, and thromoboembolisms. Thrombosis include coronary thrombosis, hepatic vein thrombosis, deep vein thrombosis, retinal vein occlusion, carotid artery thrombosis, sinus thrombosis, Wallenberg's syndrome, and thrombophlebitis.

[0609] Ischemia includes cerebral ischemia, ischemic colitis, silent ischemia, compartment syndromes, anterior compartment syndrome, myocardial ischemia, reperfusion injuries, and peripheral limb ischemia. Vasculitis includes aortitis, arteritis, Behcet's Syndrome, Churg-Strauss Syndrome, mucocutaneous lymph node syndrome, thromboangiitis obliterans, hypersensitivity vasculitis, Schoenlein-Henoch purpura, allergic cutaneous vasculitis, and Wegener's granulomatosis.

[0610] Cardiovascular diseases can also occur due to electrolyte imbalances that include, but are not limited to hyponatremia, hypernatremia, hypokalemia, hyperkalemia, hypocalcemia, hypercalcemia, hypophosphatemia, and hyperphophatemia. Neoplasm and/or cancers of the cardiovascular system include, but are not limited to, myxomas, fibromas, and rhabdomyomas.

[0611] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators,

gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

Respiratory Disorders

[0612] Polynucleotides or polypeptides, or agonists or antagonists of the present invention may be used to treat, prevent, diagnose, and/or prognose diseases and/or disorders of the respiratory system.

[0613] Diseases and disorders of the respiratory system include, but are not limited to, nasal vestibulitis, nonallergic rhinitis (e.g., acute rhinitis, chronic rhinitis, atrophic rhinitis, vasomotor rhinitis), nasal polyps, and sinusitis, juvenile angiofibromas, cancer of the nose and juvenile papillomas, vocal cord polyps, nodules (singer's nodules), contact ulcers, vocal cord paralysis, laryngoceles, pharyngitis (e.g., viral and bacterial), tonsillitis, tonsillar cellulitis, parapharyngeal abscess, laryngitis, laryngoceles, and throat cancers (e.g., cancer of the nasopharynx, tonsil cancer, larynx cancer), lung cancer (e.g., squamous cell carcinoma, small cell (oat cell) carcinoma, large cell carcinoma, and adenocarcinoma), allergic disorders (eosinophilic pneumonia, hypersensitivity pneumonitis (e.g., extrinsic allergic alveolitis, allergic interstitial pneumonitis, organic dust pneumoconiosis, allergic bronchopulmonary aspergillosis, asthma, Wegener's granulomatosis (granulomatous vasculitis), Goodpasture's syndrome)), pneumonia (e.g., bacterial pneumonia (e.g., *Streptococcus pneumoniae* (pneumoncoccal pneumonia), *Staphylococcus aureus* (staphylococcal pneumonia), Gram-negative bacterial pneumonia (caused by, e.g., *Klebsiella* and *Pseudomas spp.*), *Mycoplasma pneumoniae* pneumonia, *Hemophilus influenzae* pneumonia, *Legionella pneumophila* (Legionnaires' disease), and *Chlamydia psittaci* (Psittacosis)), and viral pneumonia (e.g., influenza, chickenpox (varicella).

[0614] Additional diseases and disorders of the respiratory system include, but are not limited to bronchiolitis, polio (poliomyelitis), croup, respiratory syncytial viral infection, mumps, erythema infectiosum (fifth disease), roseola infantum, progressive

rubella panencephalitis, german measles, and subacute sclerosing panencephalitis), fungal pneumonia (e.g., Histoplasmosis, Coccidioidomycosis, Blastomycosis, fungal infections in people with severely suppressed immune systems (e.g., cryptococcosis, caused by *Cryptococcus neoformans*; aspergillosis, caused by *Aspergillus spp.*; candidiasis, caused by *Candida*; and mucormycosis)), *Pneumocystis carinii* (pneumocystis pneumonia), atypical pneumonias (e.g., *Mycoplasma* and *Chlamydia* spp.), opportunistic infection pneumonia, nosocomial pneumonia, chemical pneumonitis, and aspiration pneumonia, pleural disorders (e.g., pleurisy, pleural effusion, and pneumothorax (e.g., simple spontaneous pneumothorax, complicated spontaneous pneumothorax, tension pneumothorax)), obstructive airway diseases (e.g., asthma, chronic obstructive pulmonary disease (COPD), emphysema, chronic or acute bronchitis), occupational lung diseases (e.g., silicosis, black lung (coal workers' pneumoconiosis), asbestosis, berylliosis, occupational asthsma, byssinosis, and benign pneumoconioses), Infiltrative Lung Disease (e.g., pulmonary fibrosis (e.g., fibrosing alveolitis, usual interstitial pneumonia), idiopathic pulmonary fibrosis, desquamative interstitial pneumonia, lymphoid interstitial pneumonia, histiocytosis X (e.g., Letterer-Siwe disease, Hand-Schüller-Christian disease, eosinophilic granuloma), idiopathic pulmonary hemosiderosis, sarcoidosis and pulmonary alveolar proteinosis), Acute respiratory distress syndrome (also called, e.g., adult respiratory distress syndrome), edema, pulmonary embolism, bronchitis (e.g., viral, bacterial), bronchiectasis, atelectasis, lung abscess (caused by, e.g., *Staphylococcus aureus* or *Legionella pneumophila*), and cystic fibrosis.

Anti-Angiogenesis Activity

[0615] The naturally occurring balance between endogenous stimulators and inhibitors of angiogenesis is one in which inhibitory influences predominate. Rastinejad *et al., Cell 56*:345-355 (1989). In those rare instances in which neovascularization occurs under normal physiological conditions, such as wound healing, organ regeneration, embryonic development, and female reproductive processes, angiogenesis is stringently regulated and spatially and temporally delimited. Under conditions of pathological angiogenesis such as that characterizing solid tumor growth, these regulatory controls fail. Unregulated angiogenesis becomes pathologic and sustains progression of many

neoplastic and non-neoplastic diseases. A number of serious diseases are dominated by abnormal neovascularization including solid tumor growth and metastases, arthritis, some types of eye disorders, and psoriasis. See, e.g., reviews by Moses *et al., Biotech. 9*:630-634 (1991); Folkman *et al., N. Engl. J. Med., 333*:1757-1763 (1995); Auerbach *et al., J. Microvasc. Res. 29*:401-411 (1985); Folkman, Advances in Cancer Research, eds. Klein and Weinhouse, Academic Press, New York, pp. 175-203 (1985); Patz, *Am. J. Opthalmol. 94*:715-743 (1982); and Folkman *et al.,* Science *221*:719-725 (1983). In a number of pathological conditions, the process of angiogenesis contributes to the disease state. For example, significant data have accumulated which suggest that the growth of solid tumors is dependent on angiogenesis. Folkman and Klagsbrun, *Science 235*:442-447 (1987).

[0616] The present invention provides for treatment of diseases or disorders associated with neovascularization by administration of the polynucleotides and/or polypeptides of the invention, as well as agonists or antagonists of the present invention. Malignant and metastatic conditions which can be treated with the polynucleotides and polypeptides, or agonists or antagonists of the invention include, but are not limited to, malignancies, solid tumors, and cancers described herein and otherwise known in the art (for a review of such disorders, see Fishman *et al.,* Medicine, 2d Ed., J. B. Lippincott Co., Philadelphia (1985)). Thus, the present invention provides a method of treating an angiogenesis-related disease and/or disorder, comprising administration to an individual in need thereof a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist of the invention. For example, polynucleotides, polypeptides, antagonists and/or agonists may be utilized in a variety of additional methods in order to therapeutically treat a cancer or tumor. Cancers which may be treated with polynucleotides, polypeptides, antagonists and/or agonists include, but are not limited to solid tumors, including prostate, lung, breast, ovarian, stomach, pancreas, larynx, esophagus, testes, liver, parotid, biliary tract, colon, rectum, cervix, uterus, endometrium, kidney, bladder, thyroid cancer; primary tumors and metastases; melanomas; glioblastoma; Kaposi's sarcoma; leiomyosarcoma; non- small cell lung cancer; colorectal cancer; advanced malignancies; and blood born tumors such as leukemias. For example, polynucleotides, polypeptides, antagonists and/or agonists may be delivered topically, in order to treat cancers such as skin cancer, head and neck tumors, breast tumors, and

Kaposi's sarcoma.

[0617] Within yet other aspects, polynucleotides, polypeptides, antagonists and/or agonists may be utilized to treat superficial forms of bladder cancer by, for example, intravesical administration. Polynucleotides, polypeptides, antagonists and/or agonists may be delivered directly into the tumor, or near the tumor site, via injection or a catheter. Of course, as the artisan of ordinary skill will appreciate, the appropriate mode of administration will vary according to the cancer to be treated. Other modes of delivery are discussed herein.

[0618] Polynucleotides, polypeptides, antagonists and/or agonists may be useful in treating other disorders, besides cancers, which involve angiogenesis. These disorders include, but are not limited to: benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis.

[0619] For example, within one aspect of the present invention methods are provided for treating hypertrophic scars and keloids, comprising the step of administering a polynucleotide, polypeptide, antagonist and/or agonist of the invention to a hypertrophic scar or keloid.

[0620] Within one embodiment of the present invention polynucleotides, polypeptides, antagonists and/or agonists of the invention are directly injected into a hypertrophic scar or keloid, in order to prevent the progression of these lesions. This therapy is of particular value in the prophylactic treatment of conditions which are known to result in the development of hypertrophic scars and keloids (e.g., burns), and is

preferably initiated after the proliferative phase has had time to progress (approximately 14 days after the initial injury), but before hypertrophic scar or keloid development. As noted above, the present invention also provides methods for treating neovascular diseases of the eye, including for example, corneal neovascularization, neovascular glaucoma, proliferative diabetic retinopathy, retrolental fibroplasia and macular degeneration.

[0621] Moreover, ocular disorders associated with neovascularization which can be treated with the polynucleotides and polypeptides of the present invention (including agonists and/or antagonists) include, but are not limited to: neovascular glaucoma, diabetic retinopathy, retinoblastoma, retrolental fibroplasia, uveitis, retinopathy of prematurity macular degeneration, corneal graft neovascularization, as well as other eye inflammatory diseases, ocular tumors and diseases associated with choroidal or iris neovascularization. See, e.g., reviews by Waltman *et al., Am. J. Ophthal. 85*:704-710 (1978) and Gartner *et al., Surv. Ophthal. 22*:291-312 (1978).

[0622] Thus, within one aspect of the present invention methods are provided for treating neovascular diseases of the eye such as corneal neovascularization (including corneal graft neovascularization), comprising the step of administering to a patient a therapeutically effective amount of a compound (as described above) to the cornea, such that the formation of blood vessels is inhibited. Briefly, the cornea is a tissue, which normally lacks blood vessels. In certain pathological conditions however, capillaries may extend into the cornea from the pericorneal vascular plexus of the limbus. When the cornea becomes vascularized, it also becomes clouded, resulting in a decline in the patient's visual acuity. Visual loss may become complete if the cornea completely opacitates. A wide variety of disorders can result in corneal neovascularization, including for example, corneal infections (e.g., trachoma, herpes simplex keratitis, leishmaniasis and onchocerciasis), immunological processes (e.g., graft rejection and Stevens-Johnson's syndrome), alkali burns, trauma, inflammation (of any cause), toxic and nutritional deficiency states, and as a complication of wearing contact lenses.

[0623] Within particularly preferred embodiments of the invention, may be prepared for topical administration in saline (combined with any of the preservatives and antimicrobial agents commonly used in ocular preparations), and administered in eyedrop form. The solution or suspension may be prepared in its pure form and administered

several times daily. Alternatively, anti-angiogenic compositions, prepared as described above, may also be administered directly to the cornea. Within preferred embodiments, the anti-angiogenic composition is prepared with a muco-adhesive polymer, which binds to cornea. Within further embodiments, the anti-angiogenic factors or anti-angiogenic compositions may be utilized as an adjunct to conventional steroid therapy. Topical therapy may also be useful prophylactically in corneal lesions which are known to have a high probability of inducing an angiogenic response (such as chemical burns). In these instances the treatment, likely in combination with steroids, may be instituted immediately to help prevent subsequent complications.

[0624] Within other embodiments, the compounds described above may be injected directly into the corneal stroma by an ophthalmologist under microscopic guidance. The preferred site of injection may vary with the morphology of the individual lesion, but the goal of the administration would be to place the composition at the advancing front of the vasculature (i.e., interspersed between the blood vessels and the normal cornea). In most cases this would involve perilimbic corneal injection to "protect" the cornea from the advancing blood vessels. This method may also be utilized shortly after a corneal insult in order to prophylactically prevent corneal neovascularization. In this situation, the material could be injected in the perilimbic cornea interspersed between the corneal lesion and its undesired potential limbic blood supply. Such methods may also be utilized in a similar fashion to prevent capillary invasion of transplanted corneas. In a sustained-release form, injections might only be required 2-3 times per year. A steroid could also be added to the injection solution to reduce inflammation resulting from the injection itself.

[0625] Within another aspect of the present invention, methods are provided for treating neovascular glaucoma, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. In one embodiment, the compound may be administered topically to the eye in order to treat early forms of neovascular glaucoma. Within other embodiments, the compound may be implanted by injection into the region of the anterior chamber angle. Within other embodiments, the compound may also be placed in any location such that the compound is

continuously released into the aqueous humor. Within another aspect of the present invention, methods are provided for treating proliferative diabetic retinopathy, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eyes, such that the formation of blood vessels is inhibited.

[0626] Within particularly preferred embodiments of the invention, proliferative diabetic retinopathy may be treated by injection into the aqueous humor or the vitreous, in order to increase the local concentration of the polynucleotide, polypeptide, antagonist and/or agonist in the retina. Preferably, this treatment should be initiated prior to the acquisition of severe disease requiring photocoagulation.

[0627] Within another aspect of the present invention, methods are provided for treating retrolental fibroplasia, comprising the step of administering to a patient a therapeutically effective amount of a polynucleotide, polypeptide, antagonist and/or agonist to the eye, such that the formation of blood vessels is inhibited. The compound may be administered topically, via intravitreous injection and/or via intraocular implants.

[0628] Additionally, disorders which can be treated with the polynucleotides, polypeptides, agonists and/or agonists include, but are not limited to, hemangioma, arthritis, psoriasis, angiofibroma, atherosclerotic plaques, delayed wound healing, granulations, hemophilic joints, hypertrophic scars, nonunion fractures, Osler-Weber syndrome, pyogenic granuloma, scleroderma, trachoma, and vascular adhesions.

[0629] Moreover, disorders and/or states, which can be treated, prevented, diagnosed and/or prognosed with the polynucleotides, polypeptides, agonists and/or agonists of the invention include, but are not limited to, solid tumors, blood born tumors such as leukemias, tumor metastasis, Kaposi's sarcoma, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas, rheumatoid arthritis, psoriasis, ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, and uvietis, delayed wound healing, endometriosis, vascluogenesis, granulations, hypertrophic scars (keloids), nonunion fractures, scleroderma, trachoma, vascular adhesions, myocardial angiogenesis, coronary collaterals, cerebral collaterals, arteriovenous malformations,

ischemic limb angiogenesis, Osler-Webber Syndrome, plaque neovascularization, telangiectasia, hemophiliac joints, angiofibroma fibromuscular dysplasia, wound granulation, Crohn's disease, atherosclerosis, birth control agent by preventing vascularization required for embryo implantation controlling menstruation, diseases that have angiogenesis as a pathologic consequence such as cat scratch disease (Rochele minalia quintosa), ulcers (Helicobacter pylori), Bartonellosis and bacillary angiomatosis.

[0630] In one aspect of the birth control method, an amount of the compound sufficient to block embryo implantation is administered before or after intercourse and fertilization have occurred, thus providing an effective method of birth control, possibly a "morning after" method. Polynucleotides, polypeptides, agonists and/or agonists may also be used in controlling menstruation or administered as either a peritoneal lavage fluid or for peritoneal implantation in the treatment of endometriosis.

[0631] Polynucleotides, polypeptides, agonists and/or agonists of the present invention may be incorporated into surgical sutures in order to prevent stitch granulomas.

[0632] Polynucleotides, polypeptides, agonists and/or agonists may be utilized in a wide variety of surgical procedures. For example, within one aspect of the present invention a compositions (in the form of, for example, a spray or film) may be utilized to coat or spray an area prior to removal of a tumor, in order to isolate normal surrounding tissues from malignant tissue, and/or to prevent the spread of disease to surrounding tissues. Within other aspects of the present invention, compositions (e.g., in the form of a spray) may be delivered via endoscopic procedures in order to coat tumors, or inhibit angiogenesis in a desired locale. Within yet other aspects of the present invention, surgical meshes, which have been coated with anti- angiogenic compositions of the present invention may be utilized in any procedure wherein a surgical mesh might be utilized. For example, within one embodiment of the invention a surgical mesh laden with an anti-angiogenic composition may be utilized during abdominal cancer resection surgery (e.g., subsequent to colon resection) in order to provide support to the structure, and to release an amount of the anti-angiogenic factor.

[0633] Within further aspects of the present invention, methods are provided for treating tumor excision sites, comprising administering a polynucleotide, polypeptide, agonist and/or agonist to the resection margins of a tumor subsequent to excision, such

that the local recurrence of cancer and the formation of new blood vessels at the site is inhibited. Within one embodiment of the invention, the anti-angiogenic compound is administered directly to the tumor excision site (e.g., applied by swabbing, brushing or otherwise coating the resection margins of the tumor with the anti-angiogenic compound). Alternatively, the anti-angiogenic compounds may be incorporated into known surgical pastes prior to administration. Within particularly preferred embodiments of the invention, the anti-angiogenic compounds are applied after hepatic resections for malignancy, and after neurosurgical operations.

[0634] Within one aspect of the present invention, polynucleotides, polypeptides, agonists and/or agonists may be administered to the resection margin of a wide variety of tumors, including for example, breast, colon, brain and hepatic tumors. For example, within one embodiment of the invention, anti-angiogenic compounds may be administered to the site of a neurological tumor subsequent to excision, such that the formation of new blood vessels at the site are inhibited.

[0635] The polynucleotides, polypeptides, agonists and/or agonists of the present invention may also be administered along with other anti-angiogenic factors. Representative examples of other anti-angiogenic factors include: Anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel, Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

[0636] Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

[0637] Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

[0638] Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

[0639] A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., Cancer Res. 51:22-26 (1991)); Sulphated Polysaccharide Peptidoglycan Complex (SP- PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., J. Bio. Chem. 267:17321-17326 (1992)); Chymostatin (Tomkinson et al., Biochem J. 286:475-480 (1992)); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., Nature 348:555-557 (1990)); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, J. Clin. Invest. 79:1440-1446 (1987)); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., J. Biol. Chem. 262(4):1659-1664 (1987)); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4- chloroanthronilic acid disodium or "CCA"; Takeuchi et al., Agents Actions 36:312-316, 1992); Thalidomide; Angostatic steroid; AGM-1470; carboxynaminolmidazole; and metalloproteinase inhibitors such as BB94.

Musculoskeletal System Disorders

[0640] Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders of the musculoskeletal system, including but not limited to, disorders of the bone, joints, ligaments, tendons, bursa, muscle, and/or neoplasms and cancers associated with musculoskeletal tissue.

[0641] Diseases or disorders of the bone include, but are not limited to, Albers-Schönberg disease, bowlegs, heel spurs, Köhler's bone disease, knock-knees, Legg-Calvé-Perthes disease, Marfan's syndrome, mucopolysaccharidoses, Osgood-Schlatter disease, osteochondroses, osteochondrodysplasia, osteomyelitis, osteopetroses, osteoporosis (postmenopausal, senile, and juvenile), Paget's disease, Scheuermann's disease, scoliosis, Sever's disease, and patellofemoral stress syndrome.

[0642] Joint diseases or disorders include, but are not limited to, ankylosing spondylitis, Behçet's syndrome, CREST syndrome, Ehlers-Danlos syndrome, infectious arthritis, discoid lupus erythematosus, systemic lupus erythematosus, Lyme disease, osteoarthritis, psoriatic arthritis, relapsing polychondrites, Reiter's syndrome, rheumatoid arthritis (adult and juvenile), scleroderma, and Still's disease.

[0643] Diseases or disorders affecting ligaments, tendons, or bursa include, but are not limited to, ankle sprain, bursitis, posterior Achilles tendon bursitis (Haglund's deformity), anterior Achilles tendon bursitis (Albert's disease), tendinitis, tenosynovitis, poplieus tendinitis, Achilles tendinitis, medial or lateral epicondylitis, rotator cuff tendinitis, spasmodic torticollis, and fibromyalgia syndrome.

[0644] Muscle diseases or disorders include, but are not limited to, Becker's muscular dystrophy, Duchenne's muscular dystrophy, Landouzy-Dejerine muscular dystrophy, Leyden-Möbius muscular dystrophy, Erb's muscular dystrophy, Charcot's joints, dermatomyositis, gout, pseudogout, glycogen storage diseases, Pompe's disease, mitochondrial myopathy, periodic paralysis, polymyalgia rheumatica, polymyositis, Steinert's disease, Thomsen's disease, anterolateral and posteromedial shin splints, posterior femoral muscle strain, and fibromyositis.

[0645] Musculoskeletal tissue may also develop cancers and/or neoplasms that include, but are not limited to, osteochondroma, benign chondroma, chondroblastoma,

chondromyxoid fibroma, osteoid osteoma, giant cell tumor, multiple myeloma, osteosarcoma, fibrosarcoma, malignant fibrous histiocytoma, chondrosarcoma, Ewing's tumor, and malignant lymphoma of bone.

Neural Activity and Neurological Diseases

[0646] The polynucleotides, polypeptides and agonists or antagonists of the invention may be used for the diagnosis and/or treatment of diseases, disorders, damage or injury of the brain and/or nervous system. Nervous system disorders that can be treated with the compositions of the invention (e.g., polypeptides, polynucleotides, and/or agonists or antagonists), include, but are not limited to, nervous system injuries, and diseases or disorders which result in either a disconnection of axons, a diminution or degeneration of neurons, or demyelination. Nervous system lesions which may be treated in a patient (including human and non-human mammalian patients) according to the methods of the invention, include but are not limited to, the following lesions of either the central (including spinal cord, brain) or peripheral nervous systems: (1) ischemic lesions, in which a lack of oxygen in a portion of the nervous system results in neuronal injury or death, including cerebral infarction or ischemia, or spinal cord infarction or ischemia; (2) traumatic lesions, including lesions caused by physical injury or associated with surgery, for example, lesions which sever a portion of the nervous system, or compression injuries; (3) malignant lesions, in which a portion of the nervous system is destroyed or injured by malignant tissue which is either a nervous system associated malignancy or a malignancy derived from non-nervous system tissue; (4) infectious lesions, in which a portion of the nervous system is destroyed or injured as a result of infection, for example, by an abscess or associated with infection by human immunodeficiency virus, herpes zoster, or herpes simplex virus or with Lyme disease, tuberculosis, or syphilis; (5) degenerative lesions, in which a portion of the nervous system is destroyed or injured as a result of a degenerative process including but not limited to, degeneration associated with Parkinson's disease, Alzheimer's disease, Huntington's chorea, or amyotrophic lateral sclerosis (ALS); (6) lesions associated with nutritional diseases or disorders, in which a portion of the nervous system is destroyed or injured by a nutritional disorder or disorder of metabolism including, but not limited to, vitamin B12 deficiency, folic acid deficiency, Wernicke

disease, tobacco-alcohol amblyopia, Marchiafava-Bignami disease (primary degeneration of the corpus callosum), and alcoholic cerebellar degeneration; (7) neurological lesions associated with systemic diseases including, but not limited to, diabetes (diabetic neuropathy, Bell's palsy), systemic lupus erythematosus, carcinoma, or sarcoidosis; (8) lesions caused by toxic substances including alcohol, lead, or particular neurotoxins; and (9) demyelinated lesions in which a portion of the nervous system is destroyed or injured by a demyelinating disease including, but not limited to, multiple sclerosis, human immunodeficiency virus-associated myelopathy, transverse myelopathy or various etiologies, progressive multifocal leukoencephalopathy, and central pontine myelinolysis.

[0647] In one embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to protect neural cells from the damaging effects of hypoxia. In a further preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to protect neural cells from the damaging effects of cerebral hypoxia. According to this embodiment, the compositions of the invention are used to treat or prevent neural cell injury associated with cerebral hypoxia. In one non-exclusive aspect of this embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention, are used to treat or prevent neural cell injury associated with cerebral ischemia. In another non-exclusive aspect of this embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with cerebral infarction.

[0648] In another preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with a stroke. In a specific embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent cerebral neural cell injury associated with a stroke.

[0649] In another preferred embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent neural cell injury associated with a heart attack. In a specific embodiment, the polypeptides, polynucleotides, or agonists or antagonists of the invention are used to treat or prevent cerebral neural cell injury associated with a heart attack.

[0650] The compositions of the invention which are useful for treating or preventing a nervous system disorder may be selected by testing for biological activity in promoting the survival or differentiation of neurons. For example, and not by way of limitation, compositions of the invention which elicit any of the following effects may be useful according to the invention: (1) increased survival time of neurons in culture either in the presence or absence of hypoxia or hypoxic conditions; (2) increased sprouting of neurons in culture or *in vivo*; (3) increased production of a neuron-associated molecule in culture or *in vivo*, *e.g.*, choline acetyltransferase or acetylcholinesterase with respect to motor neurons; or (4) decreased symptoms of neuron dysfunction *in vivo*. Such effects may be measured by any method known in the art. In preferred, non-limiting embodiments, increased survival of neurons may routinely be measured using a method set forth herein or otherwise known in the art, such as, for example, in Zhang *et al.*, *Proc Natl Acad Sci USA* 97:3637-42 (2000) or in Arakawa *et al., J. Neurosci., 10*:3507-15 (1990); increased sprouting of neurons may be detected by methods known in the art, such as, for example, the methods set forth in Pestronk *et al., Exp. Neurol., 70*:65-82 (1980), or Brown *et al., Ann. Rev. Neurosci., 4*:17-42 (1981); increased production of neuron-associated molecules may be measured by bioassay, enzymatic assay, antibody binding, Northern blot assay, etc., using techniques known in the art and depending on the molecule to be measured; and motor neuron dysfunction may be measured by assessing the physical manifestation of motor neuron disorder, e.g., weakness, motor neuron conduction velocity, or functional disability.

[0651] In specific embodiments, motor neuron disorders that may be treated according to the invention include, but are not limited to, disorders such as infarction, infection, exposure to toxin, trauma, surgical damage, degenerative disease or malignancy that may affect motor neurons as well as other components of the nervous system, as well as disorders that selectively affect neurons such as amyotrophic lateral sclerosis, and including, but not limited to, progressive spinal muscular atrophy, progressive bulbar palsy, primary lateral sclerosis, infantile and juvenile muscular atrophy, progressive bulbar paralysis of childhood (Fazio-Londe syndrome), poliomyelitis and the post polio syndrome, and Hereditary Motorsensory Neuropathy (Charcot-Marie-Tooth Disease).

[0652] Further, polypeptides or polynucleotides of the invention may play a role in neuronal survival; synapse formation; conductance; neural differentiation, etc. Thus, compositions of the invention (including polynucleotides, polypeptides, and agonists or antagonists) may be used to diagnose and/or treat or prevent diseases or disorders associated with these roles, including, but not limited to, learning and/or cognition disorders. The compositions of the invention may also be useful in the treatment or prevention of neurodegenerative disease states and/or behavioural disorders. Such neurodegenerative disease states and/or behavioral disorders include, but are not limited to, Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, Tourette Syndrome, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder, panic disorder, learning disabilities, ALS, psychoses, autism, and altered behaviors, including disorders in feeding, sleep patterns, balance, and perception. In addition, compositions of the invention may also play a role in the treatment, prevention and/or detection of developmental disorders associated with the developing embryo, or sexually-linked disorders.

[0653] Additionally, polypeptides, polynucleotides and/or agonists or antagonists of the invention, may be useful in protecting neural cells from diseases, damage, disorders, or injury, associated with cerebrovascular disorders including, but not limited to, carotid artery diseases (e.g., carotid artery thrombosis, carotid stenosis, or Moyamoya Disease), cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and thrombosis (e.g., carotid artery thrombosis, sinus thrombosis, or Wallenberg's Syndrome), cerebral hemorrhage (e.g., epidural or subdural hematoma, or subarachnoid hemorrhage), cerebral infarction, cerebral ischemia (e.g., transient cerebral ischemia, Subclavian Steal Syndrome, or vertebrobasilar insufficiency), vascular dementia (e.g., multi-infarct), leukomalacia, periventricular, and vascular headache (e.g., cluster headache or migraines).

[0654] In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate neurological cell proliferation and/or differentiation. Therefore, polynucleotides, polypeptides, agonists and/or antagonists of the invention may be used to treat and/or detect neurologic diseases. Moreover, polynucleotides or polypeptides, or agonists or

antagonists of the invention, can be used as a marker or detector of a particular nervous system disease or disorder.

[0655] Examples of neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include brain diseases, such as metabolic brain diseases which includes phenylketonuria such as maternal phenylketonuria, pyruvate carboxylase deficiency, pyruvate dehydrogenase complex deficiency, Wernicke's Encephalopathy, brain edema, brain neoplasms such as cerebellar neoplasms which include infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms, supratentorial neoplasms, canavan disease, cerebellar diseases such as cerebellar ataxia which include spinocerebellar degeneration such as ataxia telangiectasia, cerebellar dyssynergia, Friederich's Ataxia, Machado-Joseph Disease, olivopontocerebellar atrophy, cerebellar neoplasms such as infratentorial neoplasms, diffuse cerebral sclerosis such as encephalitis periaxialis, globoid cell leukodystrophy, metachromatic leukodystrophy and subacute sclerosing panencephalitis.

[0656] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include cerebrovascular disorders (such as carotid artery diseases which include carotid artery thrombosis, carotid stenosis and Moyamoya Disease), cerebral amyloid angiopathy, cerebral aneurysm, cerebral anoxia, cerebral arteriosclerosis, cerebral arteriovenous malformations, cerebral artery diseases, cerebral embolism and thrombosis such as carotid artery thrombosis, sinus thrombosis and Wallenberg's Syndrome, cerebral hemorrhage such as epidural hematoma, subdural hematoma and subarachnoid hemorrhage, cerebral infarction, cerebral ischemia such as transient cerebral ischemia, Subclavian Steal Syndrome and vertebrobasilar insufficiency, vascular dementia such as multi-infarct dementia, periventricular leukomalacia, vascular headache such as cluster headache and migraine.

[0657] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include dementia such as AIDS Dementia Complex, presenile dementia such as Alzheimer's Disease and Creutzfeldt-Jakob Syndrome, senile dementia such as

Alzheimer's Disease and progressive supranuclear palsy, vascular dementia such as multi-infarct dementia, encephalitis which include encephalitis periaxialis, viral encephalitis such as epidemic encephalitis, Japanese Encephalitis, St. Louis Encephalitis, tick-borne encephalitis and West Nile Fever, acute disseminated encephalomyelitis, meningoencephalitis such as uveomeningoencephalitic syndrome, Postencephalitic Parkinson Disease and subacute sclerosing panencephalitis, encephalomalacia such as periventricular leukomalacia, epilepsy such as generalized epilepsy which includes infantile spasms, absence epilepsy, myoclonic epilepsy which includes MERRF Syndrome, tonic-clonic epilepsy, partial epilepsy such as complex partial epilepsy, frontal lobe epilepsy and temporal lobe epilepsy, post-traumatic epilepsy, status epilepticus such as Epilepsia Partialis Continua, and Hallervorden-Spatz Syndrome.

[0658] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include hydrocephalus such as Dandy-Walker Syndrome and normal pressure hydrocephalus, hypothalamic diseases such as hypothalamic neoplasms, cerebral malaria, narcolepsy which includes cataplexy, bulbar poliomyelitis, cerebri pseudotumor, Rett Syndrome, Reye's Syndrome, thalamic diseases, cerebral toxoplasmosis, intracranial tuberculoma and Zellweger Syndrome, central nervous system infections such as AIDS Dementia Complex, Brain Abscess, subdural empyema, encephalomyelitis such as Equine Encephalomyelitis, Venezuelan Equine Encephalomyelitis, Necrotizing Hemorrhagic Encephalomyelitis, Visna, and cerebral malaria.

[0659] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include meningitis such as arachnoiditis, aseptic meningtitis such as viral meningtitis which includes lymphocytic choriomeningitis, Bacterial meningtitis which includes Haemophilus Meningtitis, Listeria Meningtitis, Meningococcal Meningtitis such as Waterhouse-Friderichsen Syndrome, Pneumococcal Meningtitis and meningeal tuberculosis, fungal meningitis such as Cryptococcal Meningtitis, subdural effusion, meningoencephalitis such as uvemeningoencephalitic syndrome, myelitis such as transverse myelitis, neurosyphilis such as tabes dorsalis, poliomyelitis which includes bulbar poliomyelitis and postpoliomyelitis syndrome, prion diseases (such as Creutzfeldt-

Jakob Syndrome, Bovine Spongiform Encephalopathy, Gerstmann-Straussler Syndrome, Kuru, Scrapie), and cerebral toxoplasmosis.

[0660] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include central nervous system neoplasms such as brain neoplasms that include cerebellar neoplasms such as infratentorial neoplasms, cerebral ventricle neoplasms such as choroid plexus neoplasms, hypothalamic neoplasms and supratentorial neoplasms, meningeal neoplasms, spinal cord neoplasms which include epidural neoplasms, demyelinating diseases such as Canavan Diseases, diffuse cerebral sceloris which includes adrenoleukodystrophy, encephalitis periaxialis, globoid cell leukodystrophy, diffuse cerebral sclerosis such as metachromatic leukodystrophy, allergic encephalomyelitis, necrotizing hemorrhagic encephalomyelitis, progressive multifocal leukoencephalopathy, multiple sclerosis, central pontine myelinolysis, transverse myelitis, neuromyelitis optica, Scrapie, Swayback, Chronic Fatigue Syndrome, Visna, High Pressure Nervous Syndrome, Meningism, spinal cord diseases such as amyotonia congenita, amyotrophic lateral sclerosis, spinal muscular atrophy such as Werdnig-Hoffmann Disease, spinal cord compression, spinal cord neoplasms such as epidural neoplasms, syringomyelia, Tabes Dorsalis, Stiff-Man Syndrome, mental retardation such as Angelman Syndrome, Cri-du-Chat Syndrome, De Lange's Syndrome, Down Syndrome, Gangliosidoses such as gangliosidoses G(M1), Sandhoff Disease, Tay-Sachs Disease, Hartnup Disease, homocystinuria, Laurence-Moon- Biedl Syndrome, Lesch-Nyhan Syndrome, Maple Syrup Urine Disease, mucolipidosis such as fucosidosis, neuronal ceroid-lipofuscinosis, oculocerebrorenal syndrome, phenylketonuria such as maternal phenylketonuria, Prader-Willi Syndrome, Rett Syndrome, Rubinstein-Taybi Syndrome, Tuberous Sclerosis, WAGR Syndrome, nervous system abnormalities such as holoprosencephaly, neural tube defects such as anencephaly which includes hydrangencephaly, Arnold-Chairi Deformity, encephalocele, meningocele, meningomyelocele, spinal dysraphism such as spina bifida cystica and spina bifida occulta.

[0661] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include hereditary motor and sensory neuropathies which include Charcot-Marie Disease,

Hereditary optic atrophy, Refsum's Disease, hereditary spastic paraplegia, Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies such as Congenital Analgesia and Familial Dysautonomia, Neurologic manifestations (such as agnosia that include Gerstmann's Syndrome, Amnesia such as retrograde amnesia, apraxia, neurogenic bladder, cataplexy, communicative disorders such as hearing disorders that includes deafness, partial hearing loss, loudness recruitment and tinnitus, language disorders such as aphasia which include agraphia, anomia, broca aphasia, and Wernicke Aphasia, Dyslexia such as Acquired Dyslexia, language development disorders, speech disorders such as aphasia which includes anomia, broca aphasia and Wernicke Aphasia, articulation disorders, communicative disorders such as speech disorders which include dysarthria, echolalia, mutism and stuttering, voice disorders such as aphonia and hoarseness, decerebrate state, delirium, fasciculation, hallucinations, meningism, movement disorders such as angelman syndrome, ataxia, athetosis, chorea, dystonia, hypokinesia, muscle hypotonia, myoclonus, tic, torticollis and tremor, muscle hypertonia such as muscle rigidity such as stiff-man syndrome, muscle spasticity, paralysis such as facial paralysis which includes Herpes Zoster Oticus, Gastroparesis, Hemiplegia, ophthalmoplegia such as diplopia, Duane's Syndrome, Horner's Syndrome, Chronic progressive external ophthalmoplegia such as Kearns Syndrome, Bulbar Paralysis, Tropical Spastic Paraparesis, Paraplegia such as Brown-Sequard Syndrome, quadriplegia, respiratory paralysis and vocal cord paralysis, paresis, phantom limb, taste disorders such as ageusia and dysgeusia, vision disorders such as amblyopia, blindness, color vision defects, diplopia, hemianopsia, scotoma and subnormal vision, sleep disorders such as hypersomnia which includes Kleine-Levin Syndrome, insomnia, and somnambulism, spasm such as trismus, unconsciousness such as coma, persistent vegetative state and syncope and vertigo, neuromuscular diseases such as amyotonia congenita, amyotrophic lateral sclerosis, Lambert-Eaton Myasthenic Syndrome, motor neuron disease, muscular atrophy such as spinal muscular atrophy, Charcot-Marie Disease and Werdnig-Hoffmann Disease, Postpoliomyelitis Syndrome, Muscular Dystrophy, Myasthenia Gravis, Myotonia Atrophica, Myotonia Confenita, Nemaline Myopathy, Familial Periodic Paralysis, Multiplex Paramyloclonus, Tropical Spastic Paraparesis and Stiff-Man Syndrome, peripheral nervous system diseases such as acrodynia, amyloid neuropathies, autonomic

nervous system diseases such as Adie's Syndrome, Barre-Lieou Syndrome, Familial Dysautonomia, Horner's Syndrome, Reflex Sympathetic Dystrophy and Shy-Drager Syndrome, Cranial Nerve Diseases such as Acoustic Nerve Diseases such as Acoustic Neuroma which includes Neurofibromatosis 2, Facial Nerve Diseases such as Facial Neuralgia,Melkersson-Rosenthal Syndrome, ocular motility disorders which includes amblyopia, nystagmus, oculomotor nerve paralysis, ophthalmoplegia such as Duane's Syndrome, Horner's Syndrome, Chronic Progressive External Ophthalmoplegia which includes Kearns Syndrome, Strabismus such as Esotropia and Exotropia, Oculomotor Nerve Paralysis, Optic Nerve Diseases such as Optic Atrophy which includes Hereditary Optic Atrophy, Optic Disk Drusen, Optic Neuritis such as Neuromyelitis Optica, Papilledema, Trigeminal Neuralgia, Vocal Cord Paralysis, Demyelinating Diseases such as Neuromyelitis Optica and Swayback, and Diabetic neuropathies such as diabetic foot.

[0662] Additional neurologic diseases which can be treated or detected with polynucleotides, polypeptides, agonists, and/or antagonists of the present invention include nerve compression syndromes such as carpal tunnel syndrome, tarsal tunnel syndrome, thoracic outlet syndrome such as cervical rib syndrome, ulnar nerve compression syndrome, neuralgia such as causalgia, cervico-brachial neuralgia, facial neuralgia and trigeminal neuralgia, neuritis such as experimental allergic neuritis, optic neuritis, polyneuritis, polyradiculoneuritis and radiculities such as polyradiculitis, hereditary motor and sensory neuropathies such as Charcot-Marie Disease, Hereditary Optic Atrophy, Refsum's Disease, Hereditary Spastic Paraplegia and Werdnig-Hoffmann Disease, Hereditary Sensory and Autonomic Neuropathies which include Congenital Analgesia and Familial Dysautonomia, POEMS Syndrome, Sciatica, Gustatory Sweating and Tetany).

Endocrine Disorders

[0663] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose disorders and/or diseases related to hormone imbalance, and/or disorders or diseases of the endocrine system.

[0664] Hormones secreted by the glands of the endocrine system control physical growth, sexual function, metabolism, and other functions. Disorders may be classified in two ways: disturbances in the production of hormones, and the inability of tissues to respond to hormones. The etiology of these hormone imbalance or endocrine system diseases, disorders or conditions may be genetic, somatic, such as cancer and some autoimmune diseases, acquired (e.g., by chemotherapy, injury or toxins), or infectious. Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention can be used as a marker or detector of a particular disease or disorder related to the endocrine system and/or hormone imbalance.

[0665] Endocrine system and/or hormone imbalance and/or diseases encompass disorders of uterine motility including, but not limited to: complications with pregnancy and labor (e.g., pre-term labor, post-term pregnancy, spontaneous abortion, and slow or stopped labor); and disorders and/or diseases of the menstrual cycle (e.g., dysmenorrhea and endometriosis).

[0666] Endocrine system and/or hormone imbalance disorders and/or diseases include disorders and/or diseases of the pancreas, such as, for example, diabetes mellitus, diabetes insipidus, congenital pancreatic agenesis, pheochromocytoma--islet cell tumor syndrome; disorders and/or diseases of the adrenal glands such as, for example, Addison's Disease, corticosteroid deficiency, virilizing disease, hirsutism, Cushing's Syndrome, hyperaldosteronism, pheochromocytoma; disorders and/or diseases of the pituitary gland, such as, for example, hyperpituitarism, hypopituitarism, pituitary dwarfism, pituitary adenoma, panhypopituitarism, acromegaly, gigantism; disorders and/or diseases of the thyroid, including but not limited to, hyperthyroidism, hypothyroidism, Plummer's disease, Graves' disease (toxic diffuse goiter), toxic nodular goiter, thyroiditis (Hashimoto's thyroiditis, subacute granulomatous thyroiditis, and silent lymphocytic thyroiditis), Pendred's syndrome, myxedema, cretinism, thyrotoxicosis, thyroid hormone coupling defect, thymic aplasia, Hurthle cell tumours of the thyroid, thyroid cancer, thyroid carcinoma, Medullary thyroid carcinoma; disorders and/or diseases of the parathyroid, such as, for example, hyperparathyroidism, hypoparathyroidism; disorders and/or diseases of the hypothalamus.

[0667] In addition, endocrine system and/or hormone imbalance disorders and/or diseases may also include disorders and/or diseases of the testes or ovaries, including cancer. Other disorders and/or diseases of the testes or ovaries further include, for example, ovarian cancer, polycystic ovary syndrome, Klinefelter's syndrome, vanishing testes syndrome (bilateral anorchia), congenital absence of Leydig's cells, cryptorchidism, Noonan's syndrome, myotonic dystrophy, capillary haemangioma of the testis (benign), neoplasias of the testis and neo-testis.

[0668] Moreover, endocrine system and/or hormone imbalance disorders and/or diseases may also include disorders and/or diseases such as, for example, polyglandular deficiency syndromes, pheochromocytoma, neuroblastoma, multiple Endocrine neoplasia, and disorders and/or cancers of endocrine tissues.

[0669] In another embodiment, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose, prognose, prevent, and/or treat endocrine diseases and/or disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1, column 7 (Tissue Distribution Library Code).

Gastrointestinal Disorders

[0670] Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to treat, prevent, diagnose, and/or prognose gastrointestinal disorders, including inflammatory diseases and/or conditions, infections, cancers (e.g., intestinal neoplasms (carcinoid tumor of the small intestine, non-Hodgkin's lymphoma of the small intestine, small bowl lymphoma)), and ulcers, such as peptic ulcers.

[0671] Gastrointestinal disorders include dysphagia, odynophagia, inflammation of the esophagus, peptic esophagitis, gastric reflux, submucosal fibrosis and stricturing, Mallory-Weiss lesions, leiomyomas, lipomas, epidermal cancers, adeoncarcinomas, gastric retention disorders, gastroenteritis, gastric atrophy, gastric/stomach cancers, polyps of the stomach, autoimmune disorders such as pernicious anemia, pyloric stenosis, gastritis (bacterial, viral, eosinophilic, stress-induced, chronic erosive, atrophic, plasma cell, and Ménétrier's), and peritoneal diseases (e.g., chyloperioneum, hemoperitoneum,

mesenteric cyst, mesenteric lymphadenitis, mesenteric vascular occlusion, panniculitis, neoplasms, peritonitis, pneumoperitoneum, bubphrenic abscess).

[0672] Gastrointestinal disorders also include disorders associated with the small intestine, such as malabsorption syndromes, distension, irritable bowel syndrome, sugar intolerance, celiac disease, duodenal ulcers, duodenitis, tropical sprue, Whipple's disease, intestinal lymphangiectasia, Crohn's disease, appendicitis, obstructions of the ileum, Meckel's diverticulum, multiple diverticula, failure of complete rotation of the small and large intestine, lymphoma, and bacterial and parasitic diseases (such as Traveler's diarrhea, typhoid and paratyphoid, cholera, infection by Roundworms (*Ascariasis lumbricoides*), Hookworms (*Ancylostoma duodenale*), Threadworms (*Enterobius vermicularis*), Tapeworms (*Taenia saginata, Echinococcus granulosus, Diphyllobothrium spp.*, and *T. solium*).

[0673] Liver diseases and/or disorders include intrahepatic cholestasis (alagille syndrome, biliary liver cirrhosis), fatty liver (alcoholic fatty liver, reye syndrome), hepatic vein thrombosis, hepatolentricular degeneration, hepatomegaly, hepatopulmonary syndrome, hepatorenal syndrome, portal hypertension (esophageal and gastric varices), liver abscess (amebic liver abscess), liver cirrhosis (alcoholic, biliary and experimental), alcoholic liver diseases (fatty liver, hepatitis, cirrhosis), parasitic (hepatic echinococcosis, fascioliasis, amebic liver abscess), jaundice (hemolytic, hepatocellular, and cholestatic), cholestasis, portal hypertension, liver enlargement, ascites, hepatitis (alcoholic hepatitis, animal hepatitis, chronic hepatitis (autoimmune, hepatitis B, hepatitis C, hepatitis D, drug induced), toxic hepatitis, viral human hepatitis (hepatitis A, hepatitis B, hepatitis C, hepatitis D, hepatitis E), Wilson's disease, granulomatous hepatitis, secondary biliary cirrhosis, hepatic encephalopathy, portal hypertension, varices, hepatic encephalopathy, primary biliary cirrhosis, primary sclerosing cholangitis, hepatocellular adenoma, hemangiomas, bile stones, liver failure (hepatic encephalopathy, acute liver failure), and liver neoplasms (angiomyolipoma, calcified liver metastases, cystic liver metastases, epithelial tumors, fibrolamellar hepatocarcinoma, focal nodular hyperplasia, hepatic adenoma, hepatobiliary cystadenoma, hepatoblastoma, hepatocellular carcinoma, hepatoma, liver cancer, liver hemangioendothelioma, mesenchymal hamartoma, mesenchymal tumors of liver, nodular regenerative hyperplasia, benign liver tumors

(Hepatic cysts [Simple cysts, Polycystic liver disease, Hepatobiliary cystadenoma, Choledochal cyst], Mesenchymal tumors [Mesenchymal hamartoma, Infantile hemangioendothelioma, Hemangioma, Peliosis hepatis, Lipomas, Inflammatory pseudotumor, Miscellaneous], Epithelial tumors [Bile duct epithelium (Bile duct hamartoma, Bile duct adenoma), Hepatocyte (Adenoma, Focal nodular hyperplasia, Nodular regenerative hyperplasia)], malignant liver tumors [hepatocellular, hepatoblastoma, hepatocellular carcinoma, cholangiocellular, cholangiocarcinoma, cystadenocarcinoma, tumors of blood vessels, angiosarcoma, Karposi's sarcoma, hemangioendothelioma, other tumors, embryonal sarcoma, fibrosarcoma, leiomyosarcoma, rhabdomyosarcoma, carcinosarcoma, teratoma, carcinoid, squamous carcinoma, primary lymphoma]), peliosis hepatis, erythrohepatic porphyria, hepatic porphyria (acute intermittent porphyria, porphyria cutanea tarda), Zellweger syndrome).

[0674] Pancreatic diseases and/or disorders include acute pancreatitis, chronic pancreatitis (acute necrotizing pancreatitis, alcoholic pancreatitis), neoplasms (adenocarcinoma of the pancreas, cystadenocarcinoma, insulinoma, gastrinoma, and glucagonoma, cystic neoplasms, islet-cell tumors, pancreoblastoma), and other pancreatic diseases (e.g., cystic fibrosis, cyst (pancreatic pseudocyst, pancreatic fistula, insufficiency)).

[0675] Gallbladder diseases include gallstones (cholelithiasis and choledocholithiasis), postcholecystectomy syndrome, diverticulosis of the gallbladder, acute cholecystitis, chronic cholecystitis, bile duct tumors, and mucocele.

[0676] Diseases and/or disorders of the large intestine include antibiotic-associated colitis, diverticulitis, ulcerative colitis, acquired megacolon, abscesses, fungal and bacterial infections, anorectal disorders (e.g., fissures, hemorrhoids), colonic diseases (colitis, colonic neoplasms [colon cancer, adenomatous colon polyps (e.g., villous adenoma), colon carcinoma, colorectal cancer], colonic diverticulitis, colonic diverticulosis, megacolon [Hirschsprung disease, toxic megacolon]; sigmoid diseases [proctocolitis, sigmoin neoplasms]), constipation, Crohn's disease, diarrhea (infantile diarrhea, dysentery), duodenal diseases (duodenal neoplasms, duodenal obstruction, duodenal ulcer, duodenitis), enteritis (enterocolitis), HIV enteropathy, ileal diseases (ileal neoplasms, ileitis), immunoproliferative small intestinal disease, inflammatory bowel

disease (ulcerative colitis, Crohn's disease), intestinal atresia, parasitic diseases (anisakiasis, balantidiasis, blastocystis infections, cryptosporidiosis, dientamoebiasis, amebic dysentery, giardiasis), intestinal fistula (rectal fistula), intestinal neoplasms (cecal neoplasms, colonic neoplasms, duodenal neoplasms, ileal neoplasms, intestinal polyps, jejunal neoplasms, rectal neoplasms), intestinal obstruction (afferent loop syndrome, duodenal obstruction, impacted feces, intestinal pseudo-obstruction [cecal volvulus], intussusception), intestinal perforation, intestinal polyps (colonic polyps, gardner syndrome, peutz-jeghers syndrome), jejunal diseases (jejunal neoplasms), malabsorption syndromes (blind loop syndrome, celiac disease, lactose intolerance, short bowl syndrome, tropical sprue, whipple's disease), mesenteric vascular occlusion, pneumatosis cystoides intestinalis, protein-losing enteropathies (intestinal lymphagiectasis), rectal diseases (anus diseases, fecal incontinence, hemorrhoids, proctitis, rectal fistula, rectal prolapse, rectocele), peptic ulcer (duodenal ulcer, peptic esophagitis, hemorrhage, perforation, stomach ulcer, Zollinger-Ellison syndrome), postgastrectomy syndromes (dumping syndrome), stomach diseases (e.g., achlorhydria, duodenogastric reflux (bile reflux), gastric antral vascular ectasia, gastric fistula, gastric outlet obstruction, gastritis (atrophic or hypertrophic), gastroparesis, stomach dilatation, stomach diverticulum, stomach neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, hyperplastic gastric polyp), stomach rupture, stomach ulcer, stomach volvulus), tuberculosis, visceroptosis, vomiting (e.g., hematemesis, hyperemesis gravidarum, postoperative nausea and vomiting) and hemorrhagic colitis.

[0677] Further diseases and/or disorders of the gastrointestinal system include biliary tract diseases, such as, gastroschisis, fistula (e.g., biliary fistula, esophageal fistula, gastric fistula, intestinal fistula, pancreatic fistula), neoplasms (e.g., biliary tract neoplasms, esophageal neoplasms, such as adenocarcinoma of the esophagus, esophageal squamous cell carcinoma, gastrointestinal neoplasms, pancreatic neoplasms, such as adenocarcinoma of the pancreas, mucinous cystic neoplasm of the pancreas, pancreatic cystic neoplasms, pancreatoblastoma, and peritoneal neoplasms), esophageal disease (e.g., bullous diseases, candidiasis, glycogenic acanthosis, ulceration, barrett esophagus varices, atresia, cyst, diverticulum (e.g., Zenker's diverticulum), fistula (e.g., tracheoesophageal fistula), motility disorders (e.g., CREST syndrome, deglutition disorders, achalasia,

spasm, gastroesophageal reflux), neoplasms, perforation (e.g., Boerhaave syndrome, Mallory-Weiss syndrome), stenosis, esophagitis, diaphragmatic hernia (e.g., hiatal hernia); gastrointestinal diseases, such as, gastroenteritis (e.g., cholera morbus, norwalk virus infection), hemorrhage (e.g., hematemesis, melena, peptic ulcer hemorrhage), stomach neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, stomach cancer)), hernia (e.g., congenital diaphragmatic hernia, femoral hernia, inguinal hernia, obturator hernia, umbilical hernia, ventral hernia), and intestinal diseases (e.g., cecal diseases (appendicitis, cecal neoplasms)).

Developmental and Inherited Disorders

[0678] Polynuceotides or polypeptides, or agonists or antagonists of the present invention may be used to treat, prevent, diagnose, and/or prognose diseases associated with mixed fetal tissues, including, but not limited to, developmental and inherited disorders or defects of the nervous system, musculoskelelal system, execretory system, cardiovascular system, hematopoietic system, gastrointestinal system, reproductive system, and respiratory system. Compositions of the present invention may also be used to treat, prevent, diagnose, and/or prognose developmental and inherited disorders or defects associated with, but not limited to, skin, hair, visual, and auditory tissues, metabolism. Additionally, the compositions of the invention may be useful in the diagnosis, treatment, and/or prevention of disorders or diseases associated with, but not limited to, chromosomal or genetic abnormalities and hyperproliferation or neoplasia.

[0679] Disorders or defects of the nervous system associated with developmental or inherited abnormalities that may be diagnosed, treated, and/or prevented with the compostions of the invention include, but are not limited to, adrenoleukodystrophy, agenesis of corpus callosum, Alexander disease, anencephaly, Angelman syndrome, Arnold-Chiari deformity, Batten disease, Canavan disease, cephalic disorders, Charcot-Marie-Tooth disease, encephalocele, Friedreich's ataxia, Gaucher's disease, Gorlin syndrome, Hallervorden-Spatz disease, hereditary spastic paraplegia, Huntington disease, hydranencephaly, hydrocephalus, Joubert syndrome, Lesch-Nyhan syndrome, leukodystrophy, Menkes disease, microcephaly, Niemann-Pick Type C1, neurofibromatosis, porencephaly, progeria, proteus syndrome, Refsum disease, spina

bifida, Sturge-Weber syndrome, Tay-Sachs disease, tuberous sclerosis, and von Hippel-Lindau disease.

[0680] Developmental and inherited disorders resulting in disorders or defects of the musculoskeletal system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, achondroplasia, atlanto-occipital fusion, arthrogryposis mulitplex congenita, autosomal recessive muscular dystrophy, Becker's muscular dystrophy, cerebral palsy, choanal atresia, cleft lip, cleft palate, clubfoot, congenital amputation, congenital dislocation of the hip, congenital torticollis, congenital scoliosis, dopa-repsonsive dystonia, Duchenne muscular dystrophy, early-onset generalized dystonia, femoral torsion, Gorlin syndrome, hypophosphatasia, Klippel-Feil syndrome, knee dislocation, myoclonic dystonia, myotonic dystrophy, nail-patella syndrome, osteogenesis imperfecta, paroxysmal dystonia, progeria, prune-belly syndrome, rapid-onset dystonia parkinsonism, scolosis, syndactyly, Treacher Collins' syndrome, velocardiofacial syndrome, and X-linked dystonia-parkinsonism.

[0681] Developmental or hereditary disorders or defects of the excretory system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, Alport's syndrome, Bartter's syndrome, bladder diverticula, bladder exstrophy, cystinuria, epispadias, Fanconi's syndrome, Hartnup disease, horseshoe kidney, hypospadias, kidney agenesis, kidney ectopia, kidney malrotation, Liddle's syndrome, medullary cystic disease, medullary sponge, multicystic kidney, kidney polycystic kidney disease, nail-patella syndrome, Potter's syndrome, urinary tract flow obstruction, vitamin D-resistant rickets, and Wilm's tumor.

[0682] Cardiovascular disorders or defects of developmental or hereditary origin that may be diagnosed, treated, and/or prevented with the compositions of the inventtion include, but are not limited to, aortic valve stenosis, atrial septal defects, artioventricular (A-V) canal defect, bicuspid aortic valve, coarctation or the aorta, dextrocardia, Ebstein's anomaly, Eisenmenger's complex, hypoplastic left heart syndrome, Marfan syndrome, patent ductus arteriosus, progeria, pulmonary atresia, pulmonary valve stenosis, subaortic stenosis, tetralogy of fallot, total anomalous pulmonary venous (P-V) connection, transposition of the great arteries, tricuspid atresia, truncus arteriosus, ventricular septal defects. Developmental or inherited disorders resulting in disorders involving the

hematopoietic system that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but not limited to, Bernard-Soulier syndrome, Chédiak-Higashi syndrome, hemophilia, Hermansky-Pudlak syndrome, sickle cell anemia, storage pool disease, thromboxane A2 dysfunction, thrombasthenia, and von Willebrand's disease.

[0683] The compositions of the invention may also be used to diagnose, treat, and/or prevent developmental and inherited disorders resulting in disorders or defects of the gastrointestinal system, including, but not limited to, anal atresia, biliary atresia, esophageal atresia, diaphragmatic hernia, Hirschsprung's disease, Meckel's diverticulum, oligohydramnios, omphalocele, polyhydramnios, porphyria, situs inversus viscera. Developmental or inherited disorders resulting in metabolic disorders that may be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, alpha-1 antitrypsin deficiency, cystic fibrosis, hemochromatosis, lysosomal storage disease, phenylketonuria, Wilson's disease, and Zellweger syndrome.

[0684] Disorders of the reproductive system that are developmentally or hereditary related that may also be diagnosed, treated, and/or prevented with the compositions of the invention include, but are not limited to, androgen insensitivity syndrome, ambiguous genitalia, autosomal sex reversal, congenital adreneal hyperplasia, gonadoblastoma, ovarian germ cell cancer, pseudohermphroditism, true hermaphroditism, undescended testis, XX male syndrome, and XY female type gonadal dysgenesis. The compositions of the invention may also be used to diagnose, treat, and/or prevent developmental or inherited respiratory defects including, but not limited to, askin tumor, azygos lobe, congenital diaphragmatic hernia, congenital lobar emphysema, cystic adenomatoid malformation, lobar emphysema, hyaline membrane disease, and pectus excavatum.

[0685] Developmental or inherited disorders may also result from chromosomal or genetic aberration that may be diagnosed, treated, and/or prevented with the compositions of the invention including, but not limited to, 4p- syndrome, cri du chat syndrome, Digeorge syndrome, Down's syndrome, Edward's syndrome, fragile X syndrome, Klinefelter's syndrome, Patau's syndrome, Prader-Willi syndrome, progeria, Turner's syndrome, triple X syndrome, and XYY syndrome. Other developmental disorders that can be diagnosed, treated, and/or prevented with the compositions of the invention,

include, but are not limited to, fetal alcohol syndrome, and can be caused by environmental factors surrounding the developing fetus.

[0686] The compositions of the invention may further be able to be used to diagnose, treat, and/or prevent errors in development or a genetic disposition that may result in hyperproliferative disorders or neoplasms, including, but not limited to, acute childhood lymphoblastic leukemia, askin tumor, Beckwith-Wiedemann syndrome, childhood acute myeloid leukemia, childhood brain stem glioma, childhood cerebellar astrocytoma, childhood extracranial germ cell tumors childhood (primary), gonadoblastoma, hepatocellular cancer, childhood Hodgkin's disease, childhood Hodgkin's lymphoma, childhood hypothalamic and visual pathway glioma, childhood (primary) liver cancer, childhood lymphoblastic leukemia, childhood medulloblastoma, childhood non-Hodgkin's lymphoma, childhood pineal and supratentorial primitive neuroectodermal tumors, childhood primary liver cancer, childhood rhabdomyosarcoma, childhood soft tissue sarcoma, Gorlin syndrome, familial multiple endrocrine neoplasia type I, neuroblastoma, ovarian germ cell cancer, pheochromocytoma, retinoblastoma, and Wilm's tumor.

[0687] Polypeptides may be administered using any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, biolistic injectors, particle accelerators, gelfoam sponge depots, other commercially available depot materials, osmotic pumps, oral or suppositorial solid pharmaceutical formulations, decanting or topical applications during surgery, aerosol delivery. Such methods are known in the art. Polypeptides may be administered as part of a Therapeutic, described in more detail below. Methods of delivering polynucleotides are described in more detail herein.

Diseases at the Cellular Level

[0688] Diseases associated with increased cell survival or the inhibition of apoptosis that could be treated, prevented, diagnosed and/or prognosed using polynucleotides or polypeptides, as well as antagonists or agonists of the present invention, include cancers (such as follicular lymphomas, carcinomas with p53 mutations, and hormone-dependent tumors, including, but not limited to colon cancer, cardiac

tumors, pancreatic cancer, melanoma, retinoblastoma, glioblastoma, lung cancer, intestinal cancer, testicular cancer, stomach cancer, neuroblastoma, myxoma, myoma, lymphoma, endothelioma, osteoblastoma, osteoclastoma, osteosarcoma, chondrosarcoma, adenoma, breast cancer, prostate cancer, Kaposi's sarcoma and ovarian cancer); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) and viral infections (such as herpes viruses, pox viruses and adenoviruses), inflammation, graft v. host disease, acute graft rejection, and chronic graft rejection.

[0689] In preferred embodiments, polynucleotides, polypeptides, and/or antagonists of the invention are used to inhibit growth, progression, and/or metastasis of cancers, in particular those [listed above] involving breast and ovarian tissues.

[0690] Additional diseases or conditions associated with increased cell survival that could be treated or detected by polynucleotides or polypeptides, or agonists or antagonists of the present invention include, but are not limited to, progression, and/or metastases of malignancies and related disorders such as leukemia (including acute leukemias (e.g., acute lymphocytic leukemia, acute myelocytic leukemia (including myeloblastic, promyelocytic, myelomonocytic, monocytic, and erythroleukemia)) and chronic leukemias (e.g., chronic myelocytic (granulocytic) leukemia and chronic lymphocytic leukemia)), polycythemia vera, lymphomas (e.g., Hodgkin's disease and non-Hodgkin's disease), multiple myeloma, Waldenstrom's macroglobulinemia, heavy chain disease, and solid tumors including, but not limited to, sarcomas and carcinomas such as fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilm's tumor, cervical cancer,

testicular tumor, lung carcinoma, small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma, acoustic neuroma, oligodendroglioma, menangioma, melanoma, neuroblastoma, and retinoblastoma.

[0691] Diseases associated with increased apoptosis that could be treated, prevented, diagnosted, and/or prognosed using polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, include, but are not limited to, AIDS; neurodegenerative disorders (such as Alzheimer's disease, Parkinson's disease, Amyotrophic lateral sclerosis, Retinitis pigmentosa, Cerebellar degeneration and brain tumor or prior associated disease); autoimmune disorders (such as, multiple sclerosis, Sjogren's syndrome, Hashimoto's thyroiditis, biliary cirrhosis, Behcet's disease, Crohn's disease, polymyositis, systemic lupus erythematosus and immune-related glomerulonephritis and rheumatoid arthritis) myelodysplastic syndromes (such as aplastic anemia), graft v. host disease, ischemic injury (such as that caused by myocardial infarction, stroke and reperfusion injury), liver injury (e.g., hepatitis related liver injury, ischemia/reperfusion injury, cholestosis (bile duct injury) and liver cancer); toxin-induced liver disease (such as that caused by alcohol), septic shock, cachexia and anorexia.

Wound Healing and Epithelial Cell Proliferation

[0692] In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate epithelial cell proliferation and basal keratinocytes for the purpose of wound healing, and to stimulate hair follicle production and healing of dermal wounds. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may be clinically useful in stimulating wound healing including surgical wounds, excisional wounds, deep wounds involving damage of the dermis and epidermis, eye tissue wounds, dental tissue wounds, oral cavity wounds, diabetic ulcers, dermal ulcers, cubitus ulcers, arterial ulcers, venous stasis ulcers, burns resulting from heat exposure or chemicals, and other abnormal wound healing conditions such as uremia, malnutrition, vitamin deficiencies and complications associated with systemic treatment with steroids, radiation therapy and

antineoplastic drugs and antimetabolites. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote dermal reestablishment subsequent to dermal loss.

[0693] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to increase the adherence of skin grafts to a wound bed and to stimulate re-epithelialization from the wound bed. The following are types of grafts that polynucleotides or polypeptides, agonists or antagonists of the present invention, could be used to increase adherence to a wound bed: autografts, artificial skin, allografts, autodermic graft, autoepdermic grafts, avacular grafts, Blair-Brown grafts, bone graft, brephoplastic grafts, cutis graft, delayed graft, dermic graft, epidermic graft, fascia graft, full thickness graft, heterologous graft, xenograft, homologous graft, hyperplastic graft, lamellar graft, mesh graft, mucosal graft, Ollier-Thiersch graft, omenpal graft, patch graft, pedicle graft, penetrating graft, split skin graft, thick split graft. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, can be used to promote skin strength and to improve the appearance of aged skin.

[0694] It is believed that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, will also produce changes in hepatocyte proliferation, and epithelial cell proliferation in the lung, breast, pancreas, stomach, small intestine, and large intestine. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could promote proliferation of epithelial cells such as sebocytes, hair follicles, hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the skin, lung, liver, and gastrointestinal tract. Polynucleotides or polypeptides, agonists or antagonists of the present invention, may promote proliferation of endothelial cells, keratinocytes, and basal keratinocytes.

[0695] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to reduce the side effects of gut toxicity that result from radiation, chemotherapy treatments or viral infections. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may have a cytoprotective effect on the small intestine mucosa. Polynucleotides or polypeptides, as

well as agonists or antagonists of the present invention, may also stimulate healing of mucositis (mouth ulcers) that result from chemotherapy and viral infections.

[0696] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could further be used in full regeneration of skin in full and partial thickness skin defects, including burns, (i.e., repopulation of hair follicles, sweat glands, and sebaceous glands), treatment of other skin defects such as psoriasis. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat epidermolysis bullosa, a defect in adherence of the epidermis to the underlying dermis which results in frequent, open and painful blisters by accelerating reepithelialization of these lesions. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to treat gastric and doudenal ulcers and help heal by scar formation of the mucosal lining and regeneration of glandular mucosa and duodenal mucosal lining more rapidly. Inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, are diseases, which result in destruction of the mucosal surface of the small or large intestine, respectively. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote the resurfacing of the mucosal surface to aid more rapid healing and to prevent progression of inflammatory bowel disease. Treatment with polynucleotides or polypeptides, agonists or antagonists of the present invention, is expected to have a significant effect on the production of mucus throughout the gastrointestinal tract and could be used to protect the intestinal mucosa from injurious substances that are ingested or following surgery. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat diseases associate with the under expression.

[0697] Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to prevent and heal damage to the lungs due to various pathological states. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate proliferation and differentiation and promote the repair of alveoli and brochiolar epithelium to prevent or treat acute or chronic lung damage. For example, emphysema, which results in the progressive loss of aveoli, and inhalation injuries, i.e., resulting from smoke inhalation and

burns, that cause necrosis of the bronchiolar epithelium and alveoli could be effectively treated using polynucleotides or polypeptides, agonists or antagonists of the present invention. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to stimulate the proliferation of and differentiation of type II pneumocytes, which may help treat or prevent disease such as hyaline membrane diseases, such as infant respiratory distress syndrome and bronchopulmonary displasia, in premature infants.

[0698] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate the proliferation and differentiation of hepatocytes and, thus, could be used to alleviate or treat liver diseases and pathologies such as fulminant liver failure caused by cirrhosis, liver damage caused by viral hepatitis and toxic substances (i.e., acetaminophen, carbon tetraholoride and other hepatotoxins known in the art).

In addition, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used treat or prevent the onset of diabetes mellitus. In patients with newly diagnosed Types I and II diabetes, where some islet cell function remains, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to maintain the islet function so as to alleviate, delay or prevent permanent manifestation of the disease. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used as an auxiliary in islet cell transplantation to improve or promote islet cell function.

Infectious Disease

[0699] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to treat or detect infectious agents. For example, by increasing the immune response, particularly increasing the proliferation and differentiation of B and/or T cells, infectious diseases may be treated. The immune response may be increased by either enhancing an existing immune response, or by initiating a new immune response. Alternatively, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may also directly inhibit the infectious agent, without necessarily eliciting an immune response.

[0700] Viruses are one example of an infectious agent that can cause disease or symptoms that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention. Examples of viruses, include, but are not limited to Examples of viruses, include, but are not limited to the following DNA and RNA viruses and viral families: Arbovirus, Adenoviridae, Arenaviridae, Arterivirus, Birnaviridae, Bunyaviridae, Caliciviridae, Circoviridae, Coronaviridae, Dengue, EBV, HIV, Flaviviridae, Hepadnaviridae (Hepatitis), Herpesviridae (such as, Cytomegalovirus, Herpes Simplex, Herpes Zoster), Mononegavirus (e.g., Paramyxoviridae, Morbillivirus, Rhabdoviridae), Orthomyxoviridae (e.g., Influenza A, Influenza B, and parainfluenza), Papiloma virus, Papovaviridae, Parvoviridae, Picornaviridae, Poxviridae (such as Smallpox or Vaccinia), Reoviridae (e.g., Rotavirus), Retroviridae (HTLV-I, HTLV-II, Lentivirus), and Togaviridae (e.g., Rubivirus). Viruses falling within these families can cause a variety of diseases or symptoms, including, but not limited to: arthritis, bronchiollitis, respiratory syncytial virus, encephalitis, eye infections (e.g., conjunctivitis, keratitis), chronic fatigue syndrome, hepatitis (A, B, C, E, Chronic Active, Delta), Japanese B encephalitis, Junin, Chikungunya, Rift Valley fever, yellow fever, meningitis, opportunistic infections (e.g., AIDS), pneumonia, Burkitt's Lymphoma, chickenpox, hemorrhagic fever, Measles, Mumps, Parainfluenza, Rabies, the common cold, Polio, leukemia, Rubella, sexually transmitted diseases, skin diseases (e.g., Kaposi's, warts), and viremia. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat: meningitis, Dengue, EBV, and/or hepatitis (e.g., hepatitis B). In an additional specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat patients nonresponsive to one or more other commercially available hepatitis vaccines. In a further specific embodiment polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat AIDS.

[0701] Similarly, bacterial and fungal agents that can cause disease or symptoms and that can be treated or detected by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following Gram-Negative and Gram-positive bacteria, bacterial families, and fungi: Actinomyces (e.g.,

Norcardia), Acinetobacter, *Cryptococcus neoformans*, Aspergillus, Bacillaceae (e.g., *Bacillus anthrasis*), Bacteroides (e.g., *Bacteroides fragilis*), Blastomycosis, Bordetella, Borrelia (e.g., *Borrelia burgdorferi*), Brucella , Candidia, Campylobacter, Chlamydia, Clostridium (e.g., *Clostridium botulinum*, *Clostridium dificile*, *Clostridium perfringens*, *Clostridium tetani*), Coccidioides, Corynebacterium (e.g., *Corynebacterium diptheriae*), Cryptococcus, Dermatocycoses, *E. coli* (e.g., Enterotoxigenic *E. coli* and Enterohemorrhagic *E. coli*), Enterobacter (e.g. *Enterobacter aerogenes*), Enterobacteriaceae (Klebsiella, Salmonella (e.g., *Salmonella typhi*, *Salmonella enteritidis*, *Salmonella typhi*), Serratia, Yersinia, Shigella), Erysipelothrix, Haemophilus (e.g., *Haemophilus influenza* type B), Helicobacter, Legionella (e.g., *Legionella pneumophila*), Leptospira, Listeria (e.g., *Listeria monocytogenes*), Mycoplasma, Mycobacterium (e.g., *Mycobacterium leprae and Mycobacterium tuberculosis)*, Vibrio (e.g., *Vibrio cholerae)*, Neisseriaceae (e.g., *Neisseria gonorrhea, Neisseria meningitidis*), Pasteurellacea, Proteus, Pseudomonas (e.g., *Pseudomonas aeruginosa*), Rickettsiaceae, Spirochetes (e.g., Treponema spp., Leptospira spp., Borrelia spp.), Shigella spp., Staphylococcus (e.g., *Staphylococcus aureus*), Meningiococcus, Pneumococcus and Streptococcus (e.g., *Streptococcus pneumoniae* and Groups A, B, and C Streptococci), and Ureaplasmas. These bacterial, parasitic, and fungal families can cause diseases or symptoms, including, but not limited to: antibiotic-resistant infections, bacteremia, endocarditis, septicemia, eye infections (e.g., conjunctivitis), uveitis, tuberculosis, gingivitis, bacterial diarrhea, opportunistic infections (e.g., AIDS related infections), paronychia, prosthesis-related infections, dental caries, Reiter's Disease, respiratory tract infections, such as Whooping Cough or Empyema, sepsis, Lyme Disease, Cat-Scratch Disease, dysentery, paratyphoid fever, food poisoning, Legionella disease, chronic and acute inflammation, erythema, yeast infections, typhoid, pneumonia, gonorrhea, meningitis (e.g., mengitis types A and B), chlamydia, syphillis, diphtheria, leprosy, brucellosis, peptic ulcers, anthrax, spontaneous abortions, birth defects, pneumonia, lung infections, ear infections, deafness, blindness, lethargy, malaise, vomiting, chronic diarrhea, Crohn's disease, colitis, vaginosis, sterility, pelvic inflammatory diseases, candidiasis, paratuberculosis, tuberculosis, lupus, botulism, gangrene, tetanus, impetigo, Rheumatic Fever, Scarlet Fever, sexually transmitted diseases, skin diseases (e.g., cellulitis, dermatocycoses),

toxemia, urinary tract infections, wound infections, noscomial infections. Polynucleotides or polypeptides, agonists or antagonists of the invention, can be used to treat or detect any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, agonists or antagonists of the invention are used to treat: tetanus, diptheria, botulism, and/or meningitis type B.

[0702] Moreover, parasitic agents causing disease or symptoms that can be treated, prevented, and/or diagnosed by a polynucleotide or polypeptide and/or agonist or antagonist of the present invention include, but not limited to, the following families or class: Amebiasis, Babesiosis, Coccidiosis, Cryptosporidiosis, Dientamoebiasis, Dourine, Ectoparasitic, Giardias, Helminthiasis, Leishmaniasis, Schistisoma, Theileriasis, Toxoplasmosis, Trypanosomiasis, and Trichomonas and Sporozoans (e.g., *Plasmodium virax*, *Plasmodium falciparium*, *Plasmodium malariae* and *Plasmodium ovale*). These parasites can cause a variety of diseases or symptoms, including, but not limited to: Scabies, Trombiculiasis, eye infections, intestinal disease (e.g., dysentery, giardiasis), liver disease, lung disease, opportunistic infections (e.g., AIDS related), malaria, pregnancy complications, and toxoplasmosis. polynucleotides or polypeptides, or agonists or antagonists of the invention, can be used to treat, prevent, and/or diagnose any of these symptoms or diseases. In specific embodiments, polynucleotides, polypeptides, or agonists or antagonists of the invention are used to treat, prevent, and/or diagnose malaria.

[0703] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention of the present invention could either be by administering an effective amount of a polypeptide to the patient, or by removing cells from the patient, supplying the cells with a polynucleotide of the present invention, and returning the engineered cells to the patient (ex vivo therapy). Moreover, the polypeptide or polynucleotide of the present invention can be used as an antigen in a vaccine to raise an immune response against infectious disease.

Regeneration

[0704] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention can be used to differentiate, proliferate, and attract cells, leading to the regeneration of tissues. (See, Science 276:59-87 (1997).) The regeneration of tissues

could be used to repair, replace, or protect tissue damaged by congenital defects, trauma (wounds, burns, incisions, or ulcers), age, disease (e.g. osteoporosis, osteocarthritis, periodontal disease, liver failure), surgery, including cosmetic plastic surgery, fibrosis, reperfusion injury, or systemic cytokine damage.

[0705] Tissues that could be regenerated using the present invention include organs (e.g., pancreas, liver, intestine, kidney, skin, endothelium), muscle (smooth, skeletal or cardiac), vasculature (including vascular and lymphatics), nervous, hematopoietic, and skeletal (bone, cartilage, tendon, and ligament) tissue. Preferably, regeneration occurs without or decreased scarring. Regeneration also may include angiogenesis.

[0706] Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may increase regeneration of tissues difficult to heal. For example, increased tendon/ligament regeneration would quicken recovery time after damage. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could also be used prophylactically in an effort to avoid damage. Specific diseases that could be treated include of tendinitis, carpal tunnel syndrome, and other tendon or ligament defects. A further example of tissue regeneration of non-healing wounds includes pressure ulcers, ulcers associated with vascular insufficiency, surgical, and traumatic wounds.

[0707] Similarly, nerve and brain tissue could also be regenerated by using polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, to proliferate and differentiate nerve cells. Diseases that could be treated using this method include central and peripheral nervous system diseases, neuropathies, or mechanical and traumatic disorders (e.g., spinal cord disorders, head trauma, cerebrovascular disease, and stoke). Specifically, diseases associated with peripheral nerve injuries, peripheral neuropathy (e.g., resulting from chemotherapy or other medical therapies), localized neuropathies, and central nervous system diseases (e.g., Alzheimer's disease, Parkinson's disease, Huntington's disease, amyotrophic lateral sclerosis, and Shy-Drager syndrome), could all be treated using the polynucleotides or polypeptides, as well as agonists or antagonists of the present invention.

Chemotaxis

[0708] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may have chemotaxis activity. A chemotaxic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial cells) to a particular site in the body, such as inflammation, infection, or site of hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

[0709] Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may increase chemotaxic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotaxic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

[0710] It is also contemplated that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may inhibit chemotactic activity. These molecules could also be used to treat disorders. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could be used as an inhibitor of chemotaxis.

Binding Activity

[0711] A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors),or small molecules.

[0712] Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5

(1991).) Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

[0713] Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide. Preferred cells include cells from mammals, yeast, Drosophila, or *E. coli.* Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.

[0714] The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.

[0715] Alternatively, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures. The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

[0716] Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g., biological sample) using a monoclonal or polyclonal antibody. The antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

[0717] Additionally, the receptor to which the polypeptide of the present invention binds can be identified by numerous methods known to those of skill in the art, for example, ligand panning and FACS sorting (Coligan, et al., Current Protocols in Immun., 1(2), Chapter 5, (1991)). For example, expression cloning is employed wherein polyadenylated RNA is prepared from a cell responsive to the polypeptides, for example, NIH3T3 cells which are known to contain multiple receptors for the FGF family proteins, and SC-3 cells, and a cDNA library created from this RNA is divided into pools and used to transfect COS cells or other cells that are not responsive to the polypeptides.

Transfected cells which are grown on glass slides are exposed to the polypeptide of the present invention, after they have been labeled. The polypeptides can be labeled by a variety of means including iodination or inclusion of a recognition site for a site-specific protein kinase.

[0718] Following fixation and incubation, the slides are subjected to auto-radiographic analysis. Positive pools are identified and sub-pools are prepared and re-transfected using an iterative sub-pooling and re-screening process, eventually yielding a single clones that encodes the putative receptor.

[0719] As an alternative approach for receptor identification, the labeled polypeptides can be photoaffinity linked with cell membrane or extract preparations that express the receptor molecule. Cross-linked material is resolved by PAGE analysis and exposed to X-ray film. The labeled complex containing the receptors of the polypeptides can be excised, resolved into peptide fragments, and subjected to protein microsequencing. The amino acid sequence obtained from microsequencing would be used to design a set of degenerate oligonucleotide probes to screen a cDNA library to identify the genes encoding the putative receptors.

[0720] Moreover, the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling") may be employed to modulate the activities of the polypeptide of the present invention thereby effectively generating agonists and antagonists of the polypeptide of the present invention. *See generally*, U.S. Patent Nos. 5,605,793, 5,811,238, 5,830,721, 5,834,252, and 5,837,458, and Patten, P. A., et al., Curr. Opinion Biotechnol. 8:724-33 (1997); Harayama, S. Trends Biotechnol. 16(2):76-82 (1998); Hansson L. O., et al., J. Mol. Biol. 287:265-76 (1999); and Lorenzo, M. M. and Blasco, R. Biotechniques 24(2):308-13 (1998); each of these patents and publications are hereby incorporated by reference). In one embodiment, alteration of polynucleotides and corresponding polypeptides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments into a desired molecule by homologous, or site-specific, recombination. In another embodiment, polynucleotides and corresponding polypeptides may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs,

sections, parts, domains, fragments, etc., of the polypeptide of the present invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules. In preferred embodiments, the heterologous molecules are family members. In further preferred embodiments, the heterologous molecule is a growth factor such as, for example, platelet-derived growth factor (PDGF), insulin-like growth factor (IGF-I), transforming growth factor (TGF)-alpha, epidermal growth factor (EGF), fibroblast growth factor (FGF), TGF-beta, bone morphogenetic protein (BMP)-2, BMP-4, BMP-5, BMP-6, BMP-7, activins A and B, decapentaplegic(dpp), 60A, OP-2, dorsalin, growth differentiation factors (GDFs), nodal, MIS, inhibin-alpha, TGF-beta1, TGF-beta2, TGF-beta3, TGF-beta5, and glial-derived neurotrophic factor (GDNF).

[0721] Other preferred fragments are biologically active fragments of the polypeptide of the present invention. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

[0722] Additionally, this invention provides a method of screening compounds to identify those which modulate the action of the polypeptide of the present invention. An example of such an assay comprises combining a mammalian fibroblast cell, the polypeptide of the present invention, the compound to be screened and ^{3}[H] thymidine under cell culture conditions where the fibroblast cell would normally proliferate. A control assay may be performed in the absence of the compound to be screened and compared to the amount of fibroblast proliferation in the presence of the compound to determine if the compound stimulates proliferation by determining the uptake of ^{3}[H] thymidine in each case. The amount of fibroblast cell proliferation is measured by liquid scintillation chromatography which measures the incorporation of ^{3}[H] thymidine. Both agonist and antagonist compounds may be identified by this procedure.

[0723] In another method, a mammalian cell or membrane preparation expressing a receptor for a polypeptide of the present invention is incubated with a labeled polypeptide of the present invention in the presence of the compound. The ability of the

compound to enhance or block this interaction could then be measured. Alternatively, the response of a known second messenger system following interaction of a compound to be screened and the receptor is measured and the ability of the compound to bind to the receptor and elicit a second messenger response is measured to determine if the compound is a potential agonist or antagonist. Such second messenger systems include but are not limited to, cAMP guanylate cyclase, ion channels or phosphoinositide hydrolysis.

[0724] All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptides of the invention from suitably manipulated cells or tissues.

[0725] Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the present invention; and (b) determining if binding has occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the present invention, (b) assaying a biological activity, and (b) determining if a biological activity of the polypeptide has been altered.

Targeted Delivery

[0726] In another embodiment, the invention provides a method of delivering compositions to targeted cells expressing a receptor for a polypeptide of the invention, or cells expressing a cell bound form of a polypeptide of the invention.

[0727] As discussed herein, polypeptides or antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (including antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another

example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

[0728] In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention (e.g., polypeptides of the invention or antibodies of the invention) in association with toxins or cytotoxic prodrugs.

[0729] By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNAse, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubisin, and phenoxyacetamide derivatives of doxorubicin.

Drug Screening

[0730] Further contemplated is the use of the polypeptides of the present invention, or the polynucleotides encoding these polypeptides, to screen for molecules which modify the activities of the polypeptides of the present invention. Such a method would include contacting the polypeptide of the present invention with a selected compound(s) suspected of having antagonist or agonist activity, and assaying the activity of these polypeptides following binding.

[0731] This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the present invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and a polypeptide of the present invention.

[0732] Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the present invention. These methods comprise contacting such an agent with a polypeptide of the present invention or a fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the present invention.

[0733] Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the present invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is incorporated herein by reference herein. Briefly stated, large numbers of different small peptide test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The peptide test compounds are reacted with polypeptides of the present invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

[0734] This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the present

invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

Antisense And Ribozyme (Antagonists)

[0735] In specific embodiments, antagonists according to the present invention are nucleic acids corresponding to the sequences contained in SEQ ID NO:X, or the complementary strand thereof, and/or to cDNA sequences contained in cDNA Clone ID NO:Z identified for example, in Table 1. In one embodiment, antisense sequence is generated internally, by the organism, in another embodiment, the antisense sequence is separately administered (see, for example, O'Connor, J., Neurochem. 56:560 (1991). Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Antisense technology can be used to control gene expression through antisense DNA or RNA, or through triple-helix formation. Antisense techniques are discussed for example, in Okano, J., Neurochem. 56:560 (1991); Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance, Lee et al., Nucleic Acids Research 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1300 (1991). The methods are based on binding of a polynucleotide to a complementary DNA or RNA.

[0736] For example, the use of c-myc and c-myb antisense RNA constructs to inhibit the growth of the non-lymphocytic leukemia cell line HL-60 and other cell lines was previously described. (Wickstrom et al. (1988); Anfossi et al. (1989)). These experiments were performed *in vitro* by incubating cells with the oligoribonucleotide. A similar procedure for *in vivo* use is described in WO 91/15580. Briefly, a pair of oligonucleotides for a given antisense RNA is produced as follows: A sequence complimentary to the first 15 bases of the open reading frame is flanked by an EcoR1 site on the 5' end and a HindIII site on the 3' end. Next, the pair of oligonucleotides is heated at 90°C for one minute and then annealed in 2X ligation buffer (20mM TRIS HCl pH 7.5, 10mM MgCl2, 10MM dithiothreitol (DTT) and 0.2 mM ATP) and then ligated to the EcoR1/Hind III site of the retroviral vector PMV7 (WO 91/15580).

[0737] For example, the 5' coding portion of a polynucleotide that encodes the polypeptide of the present invention may be used to design an antisense RNA oligonucleotide of from about 10 to 40 base pairs in length. A DNA oligonucleotide is designed to be complementary to a region of the gene involved in transcription thereby preventing transcription and the production of the receptor. The antisense RNA oligonucleotide hybridizes to the mRNA *in vivo* and blocks translation of the mRNA molecule into receptor polypeptide.

[0738] In one embodiment, the antisense nucleic acid of the invention is produced intracellularly by transcription from an exogenous sequence. For example, a vector or a portion thereof, is transcribed, producing an antisense nucleic acid (RNA) of the invention. Such a vector would contain a sequence encoding the antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art, used for replication and expression in vertebrate cells. Expression of the sequence encoding the polypeptide of the present invention or fragments thereof, can be by any promoter known in the art to act in vertebrate, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include, but are not limited to, the SV40 early promoter region (Bernoist and Chambon, Nature 29:304-310 (1981), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto et al., Cell 22:787-797 (1980), the herpes thymidine promoter (Wagner et al., Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445 (1981), the regulatory sequences of the metallothionein gene (Brinster, et al., Nature 296:39-42 (1982)), etc.

[0739] The antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a gene of the present invention. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of

the antisense nucleic acid. Generally, the larger the hybridizing nucleic acid, the more base mismatches with a RNA it may contain and still form a stable duplex (or triplex as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

[0740] Oligonucleotides that are complementary to the 5' end of the message, e.g., the 5' untranslated sequence up to and including the AUG initiation codon, should work most efficiently at inhibiting translation. However, sequences complementary to the 3' untranslated sequences of mRNAs have been shown to be effective at inhibiting translation of mRNAs as well. See generally, Wagner, R., 1994, Nature 372:333-335. Thus, oligonucleotides complementary to either the 5'- or 3'- non- translated, non-coding regions of polynucleotide sequences described herein could be used in an antisense approach to inhibit translation of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are less efficient inhibitors of translation but could be used in accordance with the invention. Whether designed to hybridize to the 5'-, 3'- or coding region of mRNA of the present invention, antisense nucleic acids should be at least six nucleotides in length, and are preferably oligonucleotides ranging from 6 to about 50 nucleotides in length. In specific aspects the oligonucleotide is at least 10 nucleotides, at least 17 nucleotides, at least 25 nucleotides or at least 50 nucleotides.

[0741] The polynucleotides of the invention can be DNA or RNA or chimeric mixtures or derivatives or modified versions thereof, single-stranded or double-stranded. The oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, Proc. Natl. Acad. Sci. U.S.A. 86:6553-6556; Lemaitre et al., 1987, Proc. Natl. Acad. Sci. 84:648-652; PCT Publication No. WO88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO89/10134, published April 25, 1988), hybridization-triggered cleavage agents. (See, e.g., Krol et al., 1988, BioTechniques 6:958-976) or intercalating agents. (See, e.g., Zon,

1988, Pharm. Res. 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

[0742] The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including, but not limited to, 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxylmethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

[0743] The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including, but not limited to, arabinose, 2-fluoroarabinose, xylulose, and hexose.

[0744] In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group including, but not limited to, a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a phosphoramidate, a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

[0745] In yet another embodiment, the antisense oligonucleotide is an a-anomeric oligonucleotide. An a-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual b-units, the strands run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-0-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

[0746] Polynucleotides of the invention may be synthesized by standard methods

known in the art, e.g. by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin et al., 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

[0747] While antisense nucleotides complementary to the coding region sequence could be used, those complementary to the transcribed untranslated region are most preferred.

[0748] Potential antagonists according to the invention also include catalytic RNA, or a ribozyme (See, e.g., PCT International Publication WO 90/11364, published October 4, 1990; Sarver et al, Science 247:1222-1225 (1990). While ribozymes that cleave mRNA at site specific recognition sequences can be used to destroy mRNAs, the use of hammerhead ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of hammerhead ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, Nature 334:585-591 (1988). There are numerous potential hammerhead ribozyme cleavage sites within the nucleotide sequence of SEQ ID NO:X. Preferably, the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA transcripts.

[0749] As in the antisense approach, the ribozymes of the invention can be composed of modified oligonucleotides (e.g. for improved stability, targeting, etc.) and should be delivered to cells which express *in vivo*. DNA constructs encoding the ribozyme may be introduced into the cell in the same manner as described above for the introduction of antisense encoding DNA. A preferred method of delivery involves using a DNA construct "encoding" the ribozyme under the control of a strong constitutive promoter, such as, for example, pol III or pol II promoter, so that transfected cells will produce sufficient quantities of the ribozyme to destroy endogenous messages and inhibit

translation. Since ribozymes unlike antisense molecules, are catalytic, a lower intracellular concentration is required for efficiency.

[0750] Antagonist/agonist compounds may be employed to inhibit the cell growth and proliferation effects of the polypeptides of the present invention on neoplastic cells and tissues, i.e. stimulation of angiogenesis of tumors, and, therefore, retard or prevent abnormal cellular growth and proliferation, for example, in tumor formation or growth.

[0751] The antagonist/agonist may also be employed to prevent hyper-vascular diseases, and prevent the proliferation of epithelial lens cells after extracapsular cataract surgery. Prevention of the mitogenic activity of the polypeptides of the present invention may also be desirous in cases such as restenosis after balloon angioplasty.

[0752] The antagonist/agonist may also be employed to prevent the growth of scar tissue during wound healing.

[0753] The antagonist/agonist may also be employed to treat the diseases described herein.

[0754] Thus, the invention provides a method of treating disorders or diseases, including but not limited to the disorders or diseases listed throughout this application, associated with overexpression of a polynucleotide of the present invention by administering to a patient (a) an antisense molecule directed to the polynucleotide of the present invention, and/or (b) a ribozyme directed to the polynucleotide of the present invention.

Binding Peptides and Other Molecules

[0755] The invention also encompasses screening methods for identifying polypeptides and nonpolypeptides that bind ovarian antigen polypeptides, and the ovarian antigen binding molecules identified thereby. These binding molecules are useful, for example, as agonists and antagonists of the ovarian antigen polypeptides. Such agonists and antagonists can be used, in accordance with the invention, in the therapeutic embodiments described in detail, below.

[0756] This method comprises the steps of:

contacting ovarian antigen polypeptides or ovarian antigen-like polypeptides with a plurality of molecules; and

identifying a molecule that binds the ovarian antigen polypeptides or ovarian antigen-like polypeptides.

[0757] The step of contacting the ovarian antigen polypeptides or ovarian antigen-like polypeptides with the plurality of molecules may be effected in a number of ways. For example, one may contemplate immobilizing the ovarian antigen polypeptides or ovarian antigen-like polypeptides on a solid support and bringing a solution of the plurality of molecules in contact with the immobilized ovarian antigen polypeptides or ovarian antigen-like polypeptides. Such a procedure would be akin to an affinity chromatographic process, with the affinity matrix being comprised of the immobilized ovarian antigen polypeptides or ovarian antigen-like polypeptides. The molecules having a selective affinity for the ovarian antigen polypeptides or ovarian antigen-like polypeptides can then be purified by affinity selection. The nature of the solid support, process for attachment of the ovarian antigen polypeptides or ovarian antigen-like polypeptides to the solid support, solvent, and conditions of the affinity isolation or selection are largely conventional and well known to those of ordinary skill in the art.

[0758] Alternatively, one may also separate a plurality of polypeptides into substantially separate fractions comprising a subset of or individual polypeptides. For instance, one can separate the plurality of polypeptides by gel electrophoresis, column chromatography, or like method known to those of ordinary skill for the separation of polypeptides. The individual polypeptides can also be produced by a transformed host cell in such a way as to be expressed on or about its outer surface (e.g., a recombinant phage). Individual isolates can then be "probed" by the ovarian antigen polypeptides or ovarian antigen-like polypeptides, optionally in the presence of an inducer should one be required for expression, to determine if any selective affinity interaction takes place between the ovarian antigen polypeptides or ovarian antigen-like polypeptides and the individual clone. Prior to contacting the ovarian antigen polypeptides or ovarian antigen-like polypeptides with each fraction comprising individual polypeptides, the polypeptides could first be transferred to a solid support for additional convenience. Such a solid support may simply be a piece of filter membrane, such as one made of nitrocellulose or nylon. In this manner, positive clones could be identified from a collection of transformed host cells of an expression library, which harbor a DNA construct encoding a polypeptide

having a selective affinity for ovarian antigen polypeptides or ovarian antigen-like polypeptides. Furthermore, the amino acid sequence of the polypeptide having a selective affinity for the ovarian antigen polypeptides or ovarian antigen-like polypeptides can be determined directly by conventional means or the coding sequence of the DNA encoding the polypeptide can frequently be determined more conveniently. The primary sequence can then be deduced from the corresponding DNA sequence. If the amino acid sequence is to be determined from the polypeptide itself, one may use microsequencing techniques. The sequencing technique may include mass spectroscopy.

[0759] In certain situations, it may be desirable to wash away any unbound ovarian antigen polypeptides or ovarian antigen-like polypeptides, or alternatively, unbound polypeptides, from a mixture of the ovarian antigen polypeptides or ovarian antigen-like polypeptides and the plurality of polypeptides prior to attempting to determine or to detect the presence of a selective affinity interaction. Such a wash step may be particularly desirable when the ovarian antigen polypeptides or ovarian antigen-like polypeptides or the plurality of polypeptides is bound to a solid support.

[0760] The plurality of molecules provided according to this method may be provided by way of diversity libraries, such as random or combinatorial peptide or nonpeptide libraries which can be screened for molecules that specifically bind ovarian antigen polypeptides. Many libraries are known in the art that can be used, e.g., chemically synthesized libraries, recombinant (e.g., phage display libraries), and *in vitro* translation-based libraries. Examples of chemically synthesized libraries are described in Fodor et al., 1991, Science 251:767-773; Houghten et al., 1991, Nature 354:84-86; Lam et al., 1991, Nature 354:82-84; Medynski, 1994, Bio/Technology 12:709-710;Gallop et al., 1994, J. Medicinal Chemistry 37(9):1233-1251; Ohlmeyer et al., 1993, Proc. Natl. Acad. Sci. USA 90:10922-10926; Erb et al., 1994, Proc. Natl. Acad. Sci. USA 91:11422-11426; Houghten et al., 1992, Biotechniques 13:412; Jayawickreme et al., 1994, Proc. Natl. Acad. Sci. USA 91:1614-1618; Salmon et al., 1993, Proc. Natl. Acad. Sci. USA 90:11708-11712; PCT Publication No. WO 93/20242; and Brenner and Lerner, 1992, Proc. Natl. Acad. Sci. USA 89:5381-5383.

[0761] Examples of phage display libraries are described in Scott and Smith, 1990, Science 249:386-390; Devlin et al., 1990, Science, 249:404-406; Christian, R. B., et al.,

1992, J. Mol. Biol. 227:711-718); Lenstra, 1992, J. Immunol. Meth. 152:149-157; Kay et al., 1993, Gene 128:59-65; and PCT Publication No. WO 94/18318 dated Aug. 18, 1994.

[0762] *In vitro* translation-based libraries include but are not limited to those described in PCT Publication No. WO 91/05058 dated Apr. 18, 1991; and Mattheakis et al., 1994, Proc. Natl. Acad. Sci. USA 91:9022-9026.

[0763] By way of examples of nonpeptide libraries, a benzodiazepine library (see e.g., Bunin et al., 1994, Proc. Natl. Acad. Sci. USA 91:4708-4712) can be adapted for use. Peptoid libraries (Simon et al., 1992, Proc. Natl. Acad. Sci. USA 89:9367-9371) can also be used. Another example of a library that can be used, in which the amide functionalities in peptides have been permethylated to generate a chemically transformed combinatorial library, is described by Ostresh et al. (1994, Proc. Natl. Acad. Sci. USA 91:11138-11142).

[0764] The variety of non-peptide libraries that are useful in the present invention is great. For example, Ecker and Crooke, 1995, Bio/Technology 13:351-360 list benzodiazepines, hydantoins, piperazinediones, biphenyls, sugar analogs, beta-mercaptoketones, arylacetic acids, acylpiperidines, benzopyrans, cubanes, xanthines, aminimides, and oxazolones as among the chemical species that form the basis of various libraries.

[0765] Non-peptide libraries can be classified broadly into two types: decorated monomers and oligomers. Decorated monomer libraries employ a relatively simple scaffold structure upon which a variety functional groups is added. Often the scaffold will be a molecule with a known useful pharmacological activity. For example, the scaffold might be the benzodiazepine structure.

[0766] Non-peptide oligomer libraries utilize a large number of monomers that are assembled together in ways that create new shapes that depend on the order of the monomers. Among the monomer units that have been used are carbamates, pyrrolinones, and morpholinos. Peptoids, peptide-like oligomers in which the side chain is attached to the alpha amino group rather than the alpha carbon, form the basis of another version of non-peptide oligomer libraries. The first non-peptide oligomer libraries utilized a single type of monomer and thus contained a repeating backbone. Recent libraries have utilized more than one monomer, giving the libraries added flexibility.

[0767] Screening the libraries can be accomplished by any of a variety of

commonly known methods. See, e.g., the following references, which disclose screening of peptide libraries: Parmley and Smith, 1989, Adv. Exp. Med. Biol. 251:215-218; Scott and Smith, 1990, Science 249:386-390; Fowlkes et al., 1992; BioTechniques 13:422-427; Oldenburg et al., 1992, Proc. Natl. Acad. Sci. USA 89:5393-5397; Yu et al., 1994, Cell 76:933-945; Staudt et al., 1988, Science 241:577-580; Bock et al., 1992, Nature 355:564-566; Tuerk et al., 1992, Proc. Natl. Acad. Sci. USA 89:6988-6992; Ellington et al., 1992, Nature 355:850-852; U.S. Pat. No. 5,096,815, U.S. Pat. No. 5,223,409, and U.S. Pat. No. 5,198,346, all to Ladner et al.; Rebar and Pabo, 1993, Science 263:671-673; and CT Publication No. WO 94/18318.

[0768] In a specific embodiment, screening to identify a molecule that binds ovarian antigen polypeptides can be carried out by contacting the library members with an ovarian antigen polypeptides or ovarian antigen-like polypeptides immobilized on a solid phase and harvesting those library members that bind to the ovarian antigen polypeptides or ovarian antigen-like polypeptides. Examples of such screening methods, termed "panning" techniques are described by way of example in Parmley and Smith, 1988, Gene 73:305-318; Fowlkes et al., 1992, BioTechniques 13:422-427; International Publication No. WO 94/18318; and in references cited herein.

[0769] In another embodiment, the two-hybrid system for selecting interacting proteins in yeast (Fields and Song, 1989, Nature 340:245-246; Chien et al., 1991, Proc. Natl. Acad. Sci. USA 88:9578-9582) can be used to identify molecules that specifically bind to ovarian antigen polypeptides or ovarian antigen-like polypeptides.

[0770] Where the ovarian antigen binding molecule is a polypeptide, the polypeptide can be conveniently selected from any peptide library, including random peptide libraries, combinatorial peptide libraries, or biased peptide libraries. The term "biased" is used herein to mean that the method of generating the library is manipulated so as to restrict one or more parameters that govern the diversity of the resulting collection of molecules, in this case peptides.

[0771] Thus, a truly random peptide library would generate a collection of peptides in which the probability of finding a particular amino acid at a given position of the peptide is the same for all 20 amino acids. A bias can be introduced into the library, however, by specifying, for example, that a lysine occur every fifth amino acid or that

positions 4, 8, and 9 of a decapeptide library be fixed to include only arginine. Clearly, many types of biases can be contemplated, and the present invention is not restricted to any particular bias. Furthermore, the present invention contemplates specific types of peptide libraries, such as phage displayed peptide libraries and those that utilize a DNA construct comprising a lambda phage vector with a DNA insert.

[0772] As mentioned above, in the case of an ovarian antigen binding molecule that is a polypeptide, the polypeptide may have about 6 to less than about 60 amino acid residues, preferably about 6 to about 10 amino acid residues, and most preferably, about 6 to about 22 amino acids. In another embodiment, an ovarian antigen binding polypeptide has in the range of 15-100 amino acids, or 20-50 amino acids.

[0773] The selected ovarian antigen binding polypeptide can be obtained by chemical synthesis or recombinant expression.

Other Activities

[0774] A polypeptide, polynucleotide, agonist, or antagonist of the present invention, as a result of the ability to stimulate vascular endothelial cell growth, may be employed in treatment for stimulating re-vascularization of ischemic tissues due to various disease conditions such as thrombosis, arteriosclerosis, and other cardiovascular conditions. The polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate angiogenesis and limb regeneration, as discussed above.

[0775] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for treating wounds due to injuries, burns, post-operative tissue repair, and ulcers since they are mitogenic to various cells of different origins, such as fibroblast cells and skeletal muscle cells, and therefore, facilitate the repair or replacement of damaged or diseased tissue.

[0776] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate neuronal growth and to treat and prevent neuronal damage which occurs in certain neuronal disorders or neuro-degenerative conditions such as Alzheimer's disease, Parkinson's disease, and AIDS-related complex. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may have the

ability to stimulate chondrocyte growth; therefore, they may be employed to enhance bone and periodontal regeneration and aid in tissue transplants or bone grafts.

[0777] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be also be employed to prevent skin aging due to sunburn by stimulating keratinocyte growth.

[0778] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for preventing hair loss, since FGF family members activate hair-forming cells and promotes melanocyte growth. Along the same lines, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be employed to stimulate growth and differentiation of hematopoietic cells and bone marrow cells when used in combination with other cytokines.

[0779] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to maintain organs before transplantation or for supporting cell culture of primary tissues. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for inducing tissue of mesodermal origin to differentiate in early embryos.

[0780] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.

[0781] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used to modulate mammalian characteristics, such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of energy.

[0782] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, caricadic rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.

[0783] A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional components.

[0784] The above-recited applications have uses in a wide variety of hosts. Such hosts include, but are not limited to, human, murine, rabbit, goat, guinea pig, camel, horse, mouse, rat, hamster, pig, micro-pig, chicken, goat, cow, sheep, dog, cat, non-human primate, and human. In specific embodiments, the host is a mouse, rabbit, goat, guinea pig, chicken, rat, hamster, pig, sheep, dog or cat. In preferred embodiments, the host is a mammal. In most preferred embodiments, the host is a human.

Other Preferred Embodiments

[0785] Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.

[0786] Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in column 4, "ORF (From-To)", in Table 1.

[0787] Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in columns 8 and 9, "NT From" and "NT To" respectively, in Table 2.

[0788] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.

[0789] Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500

contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.

[0790] A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in column 4, "ORF (From-To)", in Table 1.

[0791] A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in columns 8 and 9, "NT From" and "NT To", respectively, in Table 2.

[0792] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z.

[0793] Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in Clone ID NO:Z, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide sequence consisting of only A residues or of only T residues.

[0794] Also preferred is a composition of matter comprising a DNA molecule which comprises the cDNA contained in Clone ID NO:Z.

[0795] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides of the cDNA sequence contained in Clone ID NO:Z.

[0796] Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of an open reading frame sequence encoded by cDNA contained in Clone ID NO:Z.

[0797] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0798] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0799] A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence encoded by cDNA contained in Clone ID NO:Z.

[0800] A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in Clone ID NO:Z; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining whether the sequence of said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

[0801] Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

[0802] A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of the cDNA contained in Clone ID NO:Z.

[0803] The method for identifying the species, tissue or cell type of a biological sample can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

[0804] Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto; or the cDNA contained in Clone ID NO:Z which encodes a protein, wherein the method comprises a step of detecting in a biological sample obtained from said subject nucleic acid molecules, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of cDNA contained in Clone ID NO:Z.

[0805] The method for diagnosing a pathological condition can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

[0806] Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 4 of Table 1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in Clone ID NO:Z. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

[0807] Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a DNA microarray or "chip" of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 100, 150, 200, 250, 300, 500, 1000, 2000, 3000, or 4000 nucleotide sequences, wherein at least one sequence in said DNA microarray or "chip" is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA "Clone ID" in Table 1.

[0808] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0809] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0810] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0811] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0812] Further preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a polypeptide encoded by contained in Clone ID NO:Z

[0813] Also preferred is a polypeptide wherein said sequence of contiguous amino acids is included in the amino acid sequence of a portion of said polypeptide encoded by cDNA contained in Clone ID NO:Z; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or the polypeptide sequence of SEQ ID NO:Y.

[0814] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0815] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of a polypeptide encoded by cDNA contained in Clone ID NO:Z.

[0816] Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the amino acid sequence of a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0817] Further preferred is an isolated antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0818] Further preferred is a method for detecting in a biological sample a polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z; which method comprises a step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining whether the sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.

[0819] Also preferred is the above method wherein said step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0820] Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

[0821] Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0822] Also preferred is the above method for identifying the species, tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

[0823] Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleic acid sequence identified in Table 1 or Table 2 encoding a polypeptide, which method comprises a step of detecting in a biological sample obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0824] In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

[0825] Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said polypeptide comprises an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group

consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0826] Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said polypeptide in a prokaryotic host.

[0827] Also preferred is a polypeptide molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z.

[0828] Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector produced by this method. Also preferred is a method of making a recombinant host cell comprising introducing the vector into a host cell, as well as the recombinant host cell produced by this method.

[0829] Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a human protein comprising an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in Clone ID NO:Z. The isolated polypeptide produced by this method is also preferred.

[0830] Also preferred is a method of treatment of an individual in need of an increased level of a protein activity, which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide,

immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to increase the level of said protein activity in said individual.

[0831] Also preferred is a method of treatment of an individual in need of a decreased level of a protein activity, which method comprised administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to decrease the level of said protein activity in said individual.

[0832] Also preferred is a method of treatment of an individual in need of a specific delivery of toxic compositions to diseased cells (e.g., tumors, leukemias or lymphomas), which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide of the invention, including, but not limited to a binding agent, or antibody of the claimed invention that are associated with toxin or cytotoxic prodrugs.

[0833] Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

TABLE 6

ATCC Deposits	Deposit Date	ATCC Designation Number
LP01, LP02, LP03, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11,	May-20-97	209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069
LP12	Jan-12-98	209579
LP13	Jan-12-98	209578
LP14	Jul-16-98	203067
LP15	Jul-16-98	203068

LP16	Feb-1-99	203609
LP17	Feb-1-99	203610
LP20	Nov-17-98	203485
LP21	Jun-18-99	PTA-252
LP22	Jun-18-99	PTA-253
LP23	Dec-22-99	PTA-1081
PA108Amp	Jun-5-00	PTA-1982
PA108Kan	Jun-5-00	PTA-1985

Examples

Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample

[0834] Each Clone ID NO:Z is contained in a plasmid. Table 7 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The following correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 7 as being isolated in the vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

Vector Used to Construct Library	Corresponding Deposited Plasmid
Lambda Zap	pBluescript (pBS)
Uni-Zap XR	pBluescript (pBS)
Zap Express	pBK
lafmid BA	plafmid BA
pSport1	pSport1
pCMVSport 2.0	pCMVSport 2.0
pCMVSport 3.0	pCMVSport 3.0
pCR®2.1	pCR®2.1

[0835] Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS. The S and K refers to the orientation of

the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective end of the linker). "+" or "-" refer to the orientation of the f1 origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the f1 ori generates sense strand DNA and in the other, antisense.

[0836] Vectors pSport1, pCMVSport 2.0 and pCMVSport 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993).) Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR®2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991).) Preferably, a polynucleotide of the present invention does not comprise the vector sequences identified for the particular clone in Table 7, as well as the corresponding plasmid vector sequences designated above.

[0837] The deposited material in the sample assigned the ATCC Deposit Number cited by reference to Tables 1A, 2, 6 and 7 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each Clone ID NO:Z.

TABLE 7

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKE HUKF HUKG	Human Uterine Cancer	Lambda ZAP II	LP01
HCNA HCNB	Human Colon	Lambda Zap II	LP01
HFFA	Human Fetal Brain, random primed	Lambda Zap II	LP01
HTWA	Resting T-Cell	Lambda ZAP II	LP01
HBQA	Early Stage Human Brain, random	Lambda ZAP II	LP01

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	primed		
HLMB HLMF HLMG HLMH HLMI HLMJ HLMM HLMN	breast lymph node CDNA library	Lambda ZAP II	LP01
HCQA HCQB	human colon cancer	Lamda ZAP II	LP01
HMEA HMEC HMED HMEE HMEF HMEG HMEI HMEJ HMEK HMEL	Human Microvascular Endothelial Cells, fract. A	Lambda ZAP II	LP01
HUSA HUSC	Human Umbilical Vein Endothelial Cells, fract. A	Lambda ZAP II	LP01
HLQA HLQB	Hepatocellular Tumor	Lambda ZAP II	LP01
HHGA HHGB HHGC HHGD	Hemangiopericytoma	Lambda ZAP II	LP01
HSDM	Human Striatum Depression, re-rescue	Lambda ZAP II	LP01
HUSH	H Umbilical Vein Endothelial Cells, frac A, re-excision	Lambda ZAP II	LP01
HSGS	Salivary gland, subtracted	Lambda ZAP II	LP01
HFXA HFXB HFXC HFXD HFXE HFXF HFXG HFXH	Brain frontal cortex	Lambda ZAP II	LP01
HPQA HPQB HPQC	PERM TF274	Lambda ZAP II	LP01
HFXJ HFXK	Brain Frontal Cortex, re-excision	Lambda ZAP II	LP01
HCWA HCWB HCWC HCWD HCWE HCWF HCWG HCWH HCWI HCWJ HCWK	CD34 positive cells (Cord Blood)	ZAP Express	LP02
HCUA HCUB HCUC	CD34 depleted Buffy Coat (Cord Blood)	ZAP Express	LP02
HRSM	A-14 cell line	ZAP Express	LP02
HRSA	A1-CELL LINE	ZAP Express	LP02
HCUD HCUE HCUF HCUG HCUH HCUI	CD34 depleted Buffy Coat (Cord Blood), re-excision	ZAP Express	LP02
HBXE HBXF HBXG	H. Whole Brain #2, re-excision	ZAP Express	LP02
HRLM	L8 cell line	ZAP Express	LP02
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP02
HUDA HUDB HUDC	Testes	ZAP Express	LP02
HHTM HHTN HHTO	H. hypothalamus, frac A;re-excision	ZAP Express	LP02
HHTL	H. hypothalamus, frac A	ZAP Express	LP02
HASA HASD	Human Adult Spleen	Uni-ZAP XR	LP03
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP03
HE8A HE8B HE8C HE8D HE8E HE8F HE8M HE8N	Human 8 Week Whole Embryo	Uni-ZAP XR	LP03
HGBA HGBD HGBE HGBF HGBG HGBH HGBI	Human Gall Bladder	Uni-ZAP XR	LP03
HLHA HLHB HLHC HLHD HLHE HLHF HLHG HLHH HLHQ	Human Fetal Lung III	Uni-ZAP XR	LP03
HPMA HPMB HPMC HPMD HPME HPMF HPMG HPMH	Human Placenta	Uni-ZAP XR	LP03
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP03
HSIA HSIC HSID HSIE	Human Adult Small Intestine	Uni-ZAP XR	LP03
HTEA HTEB HTEC HTED HTEE HTEF HTEG HTEH HTEI HTEJ HTEK	Human Testes	Uni-ZAP XR	LP03
HTPA HTPB HTPC HTPD HTPE	Human Pancreas Tumor	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HTTA HTTB HTTC HTTD HTTE HTTF	Human Testes Tumor	Uni-ZAP XR	LP03
HAPA HAPB HAPC HAPM	Human Adult Pulmonary	Uni-ZAP XR	LP03
HETA HETB HETC HETD HETE HETF HETG HETH HETI	Human Endometrial Tumor	Uni-ZAP XR	LP03
HHFB HHFC HHFD HHFE HHFF HHFG HHFH HHFI	Human Fetal Heart	Uni-ZAP XR	LP03
HHPB HHPC HHPD HHPE HHPF HHPG HHPH	Human Hippocampus	Uni-ZAP XR	LP03
HCE1 HCE2 HCE3 HCE4 HCE5 HCEB HCEC HCED HCEE HCEF HCEG	Human Cerebellum	Uni-ZAP XR	LP03
HUVB HUVC HUVD HUVE	Human Umbilical Vein, Endo. remake	Uni-ZAP XR	LP03
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP03
HTAA HTAB HTAC HTAD HTAE	Human Activated T-Cells	Uni-ZAP XR	LP03
HFEA HFEB HFEC	Human Fetal Epithelium (Skin)	Uni-ZAP XR	LP03
HJPA HJPB HJPC HJPD	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Uni-ZAP XR	LP03
HESA	Human epithelioid sarcoma	Uni-Zap XR	LP03
HLTA HLTB HLTC HLTD HLTE HLTF	Human T-Cell Lymphoma	Uni-ZAP XR	LP03
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP03
HRDA HRDB HRDC HRDD HRDE HRDF	Human Rhabdomyosarcoma	Uni-ZAP XR	LP03
HCAA HCAB HCAC	Cem cells cyclohexamide treated	Uni-ZAP XR	LP03
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HSUA HSUB HSUC HSUM	Supt Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HT4A HT4C HT4D	Activated T-Cells, 12 hrs.	Uni-ZAP XR	LP03
HE9A HE9B HE9C HE9D HE9E HE9F HE9G HE9H HE9M HE9N	Nine Week Old Early Stage Human	Uni-ZAP XR	LP03
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP03
HT5A	Activated T-Cells, 24 hrs.	Uni-ZAP XR	LP03
HFGA HFGM	Human Fetal Brain	Uni-ZAP XR	LP03
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP03
HBGB HBGD	Human Primary Breast Cancer	Uni-ZAP XR	LP03
HBNA HBNB	Human Normal Breast	Uni-ZAP XR	LP03
HCAS	Cem Cells, cyclohexamide treated, subtra	Uni-ZAP XR	LP03
HHPS	Human Hippocampus, subtracted	pBS	LP03
HKCS HKCU	Human Colon Cancer, subtracted	pBS	LP03
HRGS	Raji cells, cyclohexamide treated, subtracted	pBS	LP03
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBS	LP03
HT4S	Activated T-Cells, 12 hrs, subtracted	Uni-ZAP XR	LP03
HCDA HCDB HCDC HCDD HCDE	Human Chondrosarcoma	Uni-ZAP XR	LP03
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP03
HTLA HTLB HTLC HTLD HTLE HTLF	Human adult testis, large inserts	Uni-ZAP XR	LP03
HLMA HLMC HLMD	Breast Lymph node cDNA library	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
H6EA H6EB H6EC	HL-60, PMA 4H	Uni-ZAP XR	LP03
HTXA HTXB HTXC HTXD HTXE HTXF HTXG HTXH	Activated T-Cell (12hs)/Thiouridine labelledEco	Uni-ZAP XR	LP03
HNFA HNFB HNFC HNFD HNFE HNFF HNFG HNFH HNFJ	Human Neutrophil, Activated	Uni-ZAP XR	LP03
HTOB HTOC	HUMAN TONSILS, FRACTION 2	Uni-ZAP XR	LP03
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP03
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP03
HORB	Human OB HOS treated (10 nM E2) fraction I	Uni-ZAP XR	LP03
HSVA HSVB HSVC	Human Chronic Synovitis	Uni-ZAP XR	LP03
HROA	HUMAN STOMACH	Uni-ZAP XR	LP03
HBJA HBJB HBJC HBJD HBJE HBJF HBJG HBJH HBJI HBJJ HBJK	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP03
HCRA HCRB HCRC	human corpus colosum	Uni-ZAP XR	LP03
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP03
HDSA	Dermatofibrosarcoma Protuberance	Uni-ZAP XR	LP03
HMWA HMWB HMWC HMWD HMWE HMWF HMWG HMWH HMWI HMWJ	Bone Marrow Cell Line (RS4;11)	Uni-ZAP XR	LP03
HSOA	stomach cancer (human)	Uni-ZAP XR	LP03
HERA	SKIN	Uni-ZAP XR	LP03
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP03
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP03
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP03
HBCA HBCB	H. Lymph node breast Cancer	Uni-ZAP XR	LP03
HPWT	Human Prostate BPH, re-excision	Uni-ZAP XR	LP03
HFVG HFVH HFVI	Fetal Liver, subtraction II	pBS	LP03
HNFI	Human Neutrophils, Activated, re-excision	pBS	LP03
HBMB HBMC HBMD	Human Bone Marrow, re-excision	pBS	LP03
HKML HKMM HKMN	H. Kidney Medulla, re-excision	pBS	LP03
HKIX HKIY	H. Kidney Cortex, subtracted	pBS	LP03
HADT	H. Amygdala Depression, subtracted	pBS	LP03
H6AS	Hl-60, untreated, subtracted	Uni-ZAP XR	LP03
H6ES	HL-60, PMA 4H, subtracted	Uni-ZAP XR	LP03
H6BS	HL-60, RA 4h, Subtracted	Uni-ZAP XR	LP03
H6CS	HL-60, PMA 1d, subtracted	Uni-ZAP XR	LP03
HTXJ HTXK	Activated T-cell(12h)/Thiouridine-re-excision	Uni-ZAP XR	LP03
HMSA HMSB HMSC HMSD HMSE HMSF HMSG HMSH HMSI HMSJ HMSK	Monocyte activated	Uni-ZAP XR	LP03
HAGA HAGB HAGC HAGD HAGE HAGF	Human Amygdala	Uni-ZAP XR	LP03
HSRA HSRB HSRE	STROMAL -OSTEOCLASTOMA	Uni-ZAP XR	LP03
HSRD HSRF HSRG HSRH	Human Osteoclastoma Stromal Cells - unamplified	Uni-ZAP XR	LP03
HSQA HSQB HSQC HSQD HSQE	Stromal cell TF274	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HSQF HSQG			
HSKA HSKB HSKC HSKD HSKE HSKF HSKZ	Smooth muscle, serum treated	Uni-ZAP XR	LP03
HSLA HSLB HSLC HSLD HSLE HSLF HSLG	Smooth muscle,control	Uni-ZAP XR	LP03
HSDA HSDD HSDE HSDF HSDG HSDH	Spinal cord	Uni-ZAP XR	LP03
HPWS	Prostate-BPH subtracted II	pBS	LP03
HSKW HSKX HSKY	Smooth Muscle- HASTE normalized	pBS	LP03
HFPB HFPC HFPD	H. Frontal cortex,epileptic;re-excision	Uni-ZAP XR	LP03
HSDI HSDJ HSDK	Spinal Cord, re-excision	Uni-ZAP XR	LP03
HSKN HSKO	Smooth Muscle Serum Treated, Norm	pBS	LP03
HSKG HSKH HSKI	Smooth muscle, serum induced,re-exc	pBS	LP03
HFCA HFCB HFCC HFCD HFCE HFCF	Human Fetal Brain	Uni-ZAP XR	LP04
HPTA HPTB HPTD	Human Pituitary	Uni-ZAP XR	LP04
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP04
HE6B HE6C HE6D HE6E HE6F HE6G HE6S	Human Whole Six Week Old Embryo	Uni-ZAP XR	LP04
HSSA HSSB HSSC HSSD HSSE HSSF HSSG HSSH HSSI HSSJ HSSK	Human Synovial Sarcoma	Uni-ZAP XR	LP04
HE7T	7 Week Old Early Stage Human, subtracted	Uni-ZAP XR	LP04
HEPA HEPB HEPC	Human Epididymus	Uni-ZAP XR	LP04
HSNA HSNB HSNC HSNM HSNN	Human Synovium	Uni-ZAP XR	LP04
HPFB HPFC HPFD HPFE	Human Prostate Cancer, Stage C fraction	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2M HE2N HE2O	12 Week Old Early Stage Human	Uni-ZAP XR	LP04
HE2B HE2C HE2F HE2G HE2P HE2Q	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP04
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP04
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP04
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP04
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP04
HBSD	Bone Cancer, re-excision	Uni-ZAP XR	LP04
HSGB	Salivary gland, re-excision	Uni-ZAP XR	LP04
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP04
HSXA HSXB HSXC HSXD	Human Substantia Nigra	Uni-ZAP XR	LP04
HSHA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP04
HOUA HOUB HOUC HOUD HOUE	Adipocytes	Uni-ZAP XR	LP04
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP04
HELA HELB HELC HELD HELE HELF HELG HELH	Endothelial cells-control	Uni-ZAP XR	LP04
HEMA HEMB HEMC HEMD HEME HEMF HEMG HEMH	Endothelial-induced	Uni-ZAP XR	LP04
HBIA HBIB HBIC	Human Brain, Striatum	Uni-ZAP XR	LP04
HHSA HHSB HHSC HHSD HHSE	Human Hypothalmus,Schizophrenia	Uni-ZAP XR	LP04

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HNGA HNGB HNGC HNGD HNGE HNGF HNGG HNGH HNGI HNGJ	neutrophils control	Uni-ZAP XR	LP04
HNHA HNHB HNHC HNHD HNHE HNHF HNHG HNHH HNHI HNHJ	Neutrophils IL-1 and LPS induced	Uni-ZAP XR	LP04
HSDB HSDC	STRIATUM DEPRESSION	Uni-ZAP XR	LP04
HHPT	Hypothalamus	Uni-ZAP XR	LP04
HSAT HSAU HSAV HSAW HSAX HSAY HSAZ	Anergic T-cell	Uni-ZAP XR	LP04
HBMS HBMT HBMU HBMV HBMW HBMX	Bone marrow	Uni-ZAP XR	LP04
HOEA HOEB HOEC HOED HOEE HOEF HOEJ	Osteoblasts	Uni-ZAP XR	LP04
HAIA HAIB HAIC HAID HAIE HAIF	Epithelial-TNFa and INF induced	Uni-ZAP XR	LP04
HTGA HTGB HTGC HTGD	Apoptotic T-cell	Uni-ZAP XR	LP04
HMCA HMCB HMCC HMCD HMCE	Macrophage-oxLDL	Uni-ZAP XR	LP04
HMAA HMAB HMAC HMAD HMAE HMAF HMAG	Macrophage (GM-CSF treated)	Uni-ZAP XR	LP04
HPHA	Normal Prostate	Uni-ZAP XR	LP04
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP04
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP04
HOSE HOSF HOSG	Human Osteoclastoma, re-excision	Uni-ZAP XR	LP04
HTGE HTGF	Apoptotic T-cell, re-excision	Uni-ZAP XR	LP04
HMAJ HMAK	H Macrophage (GM-CSF treated), re-excision	Uni-ZAP XR	LP04
HACB HACC HACD	Human Adipose Tissue, re-excision	Uni-ZAP XR	LP04
HFPA	H. Frontal Cortex, Epileptic	Uni-ZAP XR	LP04
HFAA HFAB HFAC HFAD HFAE	Alzheimers, spongy change	Uni-ZAP XR	LP04
HFAM	Frontal Lobe, Dementia	Uni-ZAP XR	LP04
HMIA HMIB HMIC	Human Manic Depression Tissue	Uni-ZAP XR	LP04
HTSA HTSE HTSF HTSG HTSH	Human Thymus	pBS	LP05
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBS	LP05
HSAA HSAB HSAC	HSA 172 Cells	pBS	LP05
HSBA HSBB HSBC HSBM	HSC172 cells	pBS	LP05
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBS	LP05
HJBA HJBB HJBC HJBD	Jurkat T-Cell, S phase	pBS	LP05
HAFA HAFB	Aorta endothelial cells + TNF-a	pBS	LP05
HAWA HAWB HAWC	Human White Adipose	pBS	LP05
HTNA HTNB	Human Thyroid	pBS	LP05
HONA	Normal Ovary, Premenopausal	pBS	LP05
HARA HARB	Human Adult Retina	pBS	LP05
HLJA HLJB	Human Lung	pCMVSport 1	LP06
HOFM HOFN HOFO	H. Ovarian Tumor, II, OV5232	pCMVSport 2.0	LP07
HOGA HOGB HOGC	OV 10-3-95	pCMVSport 2.0	LP07
HCGL	CD34+cells, II	pCMVSport 2.0	LP07
HDLA	Hodgkin's Lymphoma I	pCMVSport 2.0	LP07
HDTA HDTB HDTC HDTD HDTE	Hodgkin's Lymphoma II	pCMVSport 2.0	LP07

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HKAA HKAB HKAC HKAD HKAE HKAF HKAG HKAH	Keratinocyte	pCMVSport2.0	LP07
HCIM	CAPFINDER, Crohn's Disease, lib 2	pCMVSport 2.0	LP07
HKAL	Keratinocyte, lib 2	pCMVSport2.0	LP07
HKAT	Keratinocyte, lib 3	pCMVSport2.0	LP07
HNDA	Nasal polyps	pCMVSport2.0	LP07
HDRA	H. Primary Dendritic Cells,lib 3	pCMVSport2.0	LP07
HOHA HOHB HOHC	Human Osteoblasts II	pCMVSport2.0	LP07
HLDA HLDB HLDC	Liver, Hepatoma	pCMVSport3.0	LP08
HLDN HLDO HLDP	Human Liver, normal	pCMVSport3.0	LP08
HMTA	pBMC stimulated w/ poly I/C	pCMVSport3.0	LP08
HNTA	NTERA2, control	pCMVSport3.0	LP08
HDPA HDPB HDPC HDPD HDPF HDPG HDPH HDPI HDPJ HDPK	Primary Dendritic Cells, lib 1	pCMVSport3.0	LP08
HDPM HDPN HDPO HDPP	Primary Dendritic cells,frac 2	pCMVSport3.0	LP08
HMUA HMUB HMUC	Myoloid Progenitor Cell Line	pCMVSport3.0	LP08
HHEA HHEB HHEC HHED	T Cell helper I	pCMVSport3.0	LP08
HHEM HHEN HHEO HHEP	T cell helper II	pCMVSport3.0	LP08
HEQA HEQB HEQC	Human endometrial stromal cells	pCMVSport3.0	LP08
HJMA HJMB	Human endometrial stromal cells-treated with progesterone	pCMVSport3.0	LP08
HSWA HSWB HSWC	Human endometrial stromal cells-treated with estradiol	pCMVSport3.0	LP08
HSYA HSYB HSYC	Human Thymus Stromal Cells	pCMVSport3.0	LP08
HLWA HLWB HLWC	Human Placenta	pCMVSport3.0	LP08
HRAA HRAB HRAC	Rejected Kidney, lib 4	pCMVSport3.0	LP08
HMTM	PCR, pBMC I/C treated	PCRII	LP09
HMJA	H. Meniingima, M6	pSport 1	LP10
HMKA HMKB HMKC HMKD HMKE	H. Meningima, M1	pSport 1	LP10
HUSG HUSI	Human umbilical vein endothelial cells, IL-4 induced	pSport 1	LP10
HUSX HUSY	Human Umbilical Vein Endothelial Cells, uninduced	pSport 1	LP10
HOFA	Ovarian Tumor I, OV5232	pSport 1	LP10
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport 1	LP10
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport 1	LP10
HADA HADC HADD HADE HADF HADG	Human Adipose	pSport 1	LP10
HOVA HOVB HOVC	Human Ovary	pSport 1	LP10
HTWB HTWC HTWD HTWE HTWF	Resting T-Cell Library,II	pSport 1	LP10
HMMA	Spleen metastic melanoma	pSport 1	LP10
HLYA HLYB HLYC HLYD HLYE	Spleen, Chronic lymphocytic leukemia	pSport 1	LP10
HCGA	CD34+ cell, I	pSport 1	LP10
HEOM HEON	Human Eosinophils	pSport 1	LP10
HTDA	Human Tonsil, Lib 3	pSport 1	LP10
HSPA	Salivary Gland, Lib 2	pSport 1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HCHA HCHB HCHC	Breast Cancer cell line, MDA 36	pSport 1	LP10
HCHM HCHN	Breast Cancer Cell line, angiogenic	pSport 1	LP10
HCIA	Crohn's Disease	pSport 1	LP10
HDAA HDAB HDAC	HEL cell line	pSport 1	LP10
HABA	Human Astrocyte	pSport 1	LP10
HUFA HUFB HUFC	Ulcerative Colitis	pSport 1	LP10
HNTM	NTERA2 + retinoic acid, 14 days	pSport 1	LP10
HDQA	Primary Dendritic cells,CapFinder2, frac 1	pSport 1	LP10
HDQM	Primary Dendritic Cells, CapFinder, frac 2	pSport 1	LP10
HLDX	Human Liver, normal,	pSport 1	LP10
HULA HULB HULC	Human Dermal Endothelial Cells,untreated	pSport1	LP10
HUMA	Human Dermal Endothelial cells,treated	pSport1	LP10
HCJA	Human Stromal Endometrial fibroblasts, untreated	pSport1	LP10
HCJM	Human Stromal endometrial fibroblasts, treated w/ estradiol	pSport1	LP10
HEDA	Human Stromal endometrial fibroblasts, treated with progesterone	pSport1	LP10
HFNA	Human ovary tumor cell OV350721	pSport1	LP10
HKGA HKGB HKGC HKGD	Merkel Cells	pSport1	LP10
HISA HISB HISC	Pancreas Islet Cell Tumor	pSport1	LP10
HLSA	Skin, burned	pSport1	LP10
HBZA	Prostate,BPH, Lib 2	pSport 1	LP10
HBZS	Prostate BPH,Lib 2, subtracted	pSport 1	LP10
HFIA HFIB HFIC	Synovial Fibroblasts (control)	pSport 1	LP10
HFIH HFII HFIJ	Synovial hypoxia	pSport 1	LP10
HFIT HFIU HFIV	Synovial IL-1/TNF stimulated	pSport 1	LP10
HGCA	Messangial cell, frac 1	pSport1	LP10
HMVA HMVB HMVC	Bone Marrow Stromal Cell, untreated	pSport1	LP10
HFIX HFIY HFIZ	Synovial Fibroblasts (Il1/TNF), subt	pSport1	LP10
HFOX HFOY HFOZ	Synovial hypoxia-RSF subtracted	pSport1	LP10
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP11
HLIA HLIB HLIC	Human Liver	pCMVSport 1	LP012
HHBA HHBB HHBC HHBD HHBE	Human Heart	pCMVSport 1	LP012
HBBA HBBB	Human Brain	pCMVSport 1	LP012
HLJA HLJB HLJC HLJD HLJE	Human Lung	pCMVSport 1	LP012
HOGA HOGB HOGC	Ovarian Tumor	pCMVSport 2.0	LP012
HTJM	Human Tonsils, Lib 2	pCMVSport 2.0	LP012
HAMF HAMG	KMH2	pCMVSport 3.0	LP012
HAJA HAJB HAJC	L428	pCMVSport 3.0	LP012
HWBA HWBB HWBC HWBD HWBE	Dendritic cells, pooled	pCMVSport 3.0	LP012
HWAA HWAB HWAC HWAD HWAE	Human Bone Marrow, treated	pCMVSport 3.0	LP012
HYAA HYAB HYAC	B Cell lymphoma	pCMVSport 3.0	LP012
HWHG HWHH HWHI	Healing groin wound, 6.5 hours post	pCMVSport 3.0	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	incision		
HWHP HWHQ HWHR	Healing groin wound; 7.5 hours post incision	pCMVSport 3.0	LP012
HARM	Healing groin wound - zero hr post-incision (control)	pCMVSport 3.0	LP012
HBIM	Olfactory epithelium; nasalcavity	pCMVSport 3.0	LP012
HWDA	Healing Abdomen wound; 70&90 min post incision	pCMVSport 3.0	LP012
HWEA	Healing Abdomen Wound;15 days post incision	pCMVSport 3.0	LP012
HWJA	Healing Abdomen Wound;21&29 days	pCMVSport 3.0	LP012
HNAL	Human Tongue, frac 2	pSport1	LP012
HMJA	H. Meniingima, M6	pSport1	LP012
HMKA HMKB HMKC HMKD HMKE	H. Meningima, M1	pSport1	LP012
HOFA	Ovarian Tumor I, OV5232	pSport1	LP012
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport1	LP012
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport1	LP012
HMMA HMMB HMMC	Spleen metastic melanoma	pSport1	LP012
HTDA	Human Tonsil, Lib 3	pSport1	LP012
HDBA	Human Fetal Thymus	pSport1	LP012
HDUA	Pericardium	pSport1	LP012
HBZA	Prostate,BPH, Lib 2	pSport1	LP012
HWCA	Larynx tumor	pSport1	LP012
HWKA	Normal lung	pSport1	LP012
HSMB	Bone marrow stroma,treated	pSport1	LP012
HBHM	Normal trachea	pSport1	LP012
HLFC	Human Larynx	pSport1	LP012
HLRB	Siebben Polyposis	pSport1	LP012
HNIA	Mammary Gland	pSport1	LP012
HNJB	Palate carcinoma	pSport1	LP012
HNKA	Palate normal	pSport1	LP012
HMZA	Pharynx carcinoma	pSport1	LP012
HABG	Cheek Carcinoma	pSport1	LP012
HMZM	Pharynx Carcinoma	pSport1	LP012
HDRM	Larynx Carcinoma	pSport1	LP012
HVAA	Pancreas normal PCA4 No	pSport1	LP012
HICA	Tongue carcinoma	pSport1	LP012
HUKA HUKB HUKC HUKD HUKE	Human Uterine Cancer	Lambda ZAP II	LP013
HFFA	Human Fetal Brain, random primed	Lambda ZAP II	LP013
HTUA	Activated T-cell labeled with 4-thioluri	Lambda ZAP II	LP013
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP013
HMEB	Human microvascular Endothelial cells, fract. B	Lambda ZAP II	LP013
HUSH	Human Umbilical Vein Endothelial cells, fract. A, re-excision	Lambda ZAP II	LP013
HLQC HLQD	Hepatocellular tumor, re-excision	Lambda ZAP II	LP013
HTWJ HTWK HTWL	Resting T-cell, re-excision	Lambda ZAP II	LP013
HF6S	Human Whole 6 week Old Embryo (II), subt	pBluescript	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HHPS	Human Hippocampus, subtracted	pBluescript	LP013
HL1S	LNCAP, differential expression	pBluescript	LP013
HLHS HLHT	Early Stage Human Lung, Subtracted	pBluescript	LP013
HSUS	Supt cells, cyclohexamide treated, subtracted	pBluescript	LP013
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBluescript	LP013
HSDS	H. Striatum Depression, subtracted	pBluescript	LP013
HPTZ	Human Pituitary, Subtracted VII	pBluescript	LP013
HSDX	H. Striatum Depression, subt II	pBluescript	LP013
HSDZ	H. Striatum Depression, subt	pBluescript	LP013
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBluescript SK-	LP013
HRTA	Colorectal Tumor	pBluescript SK-	LP013
HSBA HSBB HSBC HSBM	HSC172 cells	pBluescript SK-	LP013
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBluescript SK-	LP013
HJBA HJBB HJBC HJBD	Jurkat T-cell, S1 phase	pBluescript SK-	LP013
HTNA HTNB	Human Thyroid	pBluescript SK-	LP013
HAHA HAHB	Human Adult Heart	Uni-ZAP XR	LP013
HE6A	Whole 6 week Old Embryo	Uni-ZAP XR	LP013
HFCA HFCB HFCC HFCD HFCE	Human Fetal Brain	Uni-ZAP XR	LP013
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP013
HGBA HGBD HGBE HGBF HGBG	Human Gall Bladder	Uni-ZAP XR	LP013
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP013
HTEA HTEB HTEC HTED HTEE	Human Testes	Uni-ZAP XR	LP013
HTTA HTTB HTTC HTTD HTTE	Human Testes Tumor	Uni-ZAP XR	LP013
HYBA HYBB	Human Fetal Bone	Uni-ZAP XR	LP013
HFLA	Human Fetal Liver	Uni-ZAP XR	LP013
HHFB HHFC HHFD HHFE HHFF	Human Fetal Heart	Uni-ZAP XR	LP013
HUVB HUVC HUVD HUVE	Human Umbilical Vein, End. remake	Uni-ZAP XR	LP013
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP013
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP013
HTAA HTAB HTAC HTAD HTAE	Human Activated T-cells	Uni-ZAP XR	LP013
HFEA HFEB HFEC	Human Fetal Epithelium (skin)	Uni-ZAP XR	LP013
HJPA HJPB HJPC HJPD	Human Jurkat Membrane Bound Polysomes	Uni-ZAP XR	LP013
HESA	Human Epithelioid Sarcoma	Uni-ZAP XR	LP013
HALS	Human Adult Liver, Subtracted	Uni-ZAP XR	LP013
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP013
HCAA HCAB HCAC	Cem cells, cyclohexamide treated	Uni-ZAP XR	LP013
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP013
HE9A HE9B HE9C HE9D HE9E	Nine Week Old Early Stage Human	Uni-ZAP XR	LP013
HSFA	Human Fibrosarcoma	Uni-ZAP XR	LP013
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP013
HTRA	Human Trachea Tumor	Uni-ZAP XR	LP013
HE2A HE2D HE2E HE2H HE2I	12 Week Old Early Stage Human	Uni-ZAP XR	LP013
HE2B HE2C HE2F HE2G HE2P	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP013
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP013
HBGA	Human Primary Breast Cancer	Uni-ZAP XR	LP013
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP013
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP013
HTOA HTOD HTOE HTOF HTOG	human tonsils	Uni-ZAP XR	LP013
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP013
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP013
HOQB	Human OB HOS treated (1 nM E2) fraction I	Uni-ZAP XR	LP013
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP013
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP013
HROA HROC	HUMAN STOMACH	Uni-ZAP XR	LP013
HBJA HBJB HBJC HBJD HBJE	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP013
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP013
HCPA	Corpus Callosum	Uni-ZAP XR	LP013
HSOA	stomach cancer (human)	Uni-ZAP XR	LP013
HERA	SKIN	Uni-ZAP XR	LP013
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP013
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP013
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP013
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP013
HAPN HAPO HAPP HAPQ HAPR	Human Adult Pulmonary;re-excision	Uni-ZAP XR	LP013
HLTG HLTH	Human T-cell lymphoma;re-excision	Uni-ZAP XR	LP013
HAHC HAHD HAHE	Human Adult Heart;re-excision	Uni-ZAP XR	LP013
HAGA HAGB HAGC HAGD HAGE	Human Amygdala	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP013
HSHA HSHB HSHC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP013
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP013
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP013
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP013
HBTA	Bone Marrow Stroma, TNF&LPS ind	Uni-ZAP XR	LP013
HMCF HMCG HMCH HMCI HMCJ	Macrophage-oxLDL; re-excision	Uni-ZAP XR	LP013
HAGG HAGH HAGI	Human Amygdala;re-excision	Uni-ZAP XR	LP013
HACA	H. Adipose Tissue	Uni-ZAP XR	LP013
HKFB	K562 + PMA (36 hrs),re-excision	ZAP Express	LP013
HCWT HCWU HCWV	CD34 positive cells (cord blood),re-ex	ZAP Express	LP013
HBWA	Whole brain	ZAP Express	LP013
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP013
HAVM	Temporal cortex-Alzheizmer	pT-Adv	LP014
HAVT	Hippocampus, Alzheimer Subtracted	pT-Adv	LP014
HHAS	CHME Cell Line	Uni-ZAP XR	LP014
HAJR	Larynx normal	pSport 1	LP014
HWLE HWLF HWLG HWLH	Colon Normal	pSport 1	LP014
HCRM HCRN HCRO	Colon Carcinoma	pSport 1	LP014
HWLI HWLJ HWLK	Colon Normal	pSport 1	LP014
HWLQ HWLR HWLS HWLT	Colon Tumor	pSport 1	LP014
HBFM	Gastrocnemius Muscle	pSport 1	LP014
HBOD HBOE	Quadriceps Muscle	pSport 1	LP014
HBKD HBKE	Soleus Muscle	pSport 1	LP014

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HCCM	Pancreatic Langerhans	pSport 1	LP014
HWGA	Larynx carcinoma	pSport 1	LP014
HWGM HWGN	Larynx carcinoma	pSport 1	LP014
HWLA HWLB HWLC	Normal colon	pSport 1	LP014
HWLM HWLN	Colon Tumor	pSport 1	LP014
HVAM HVAN HVAO	Pancreas Tumor	pSport 1	LP014
HWGQ	Larynx carcinoma	pSport 1	LP014
HAQM HAQN	Salivary Gland	pSport 1	LP014
HASM	Stomach; normal	pSport 1	LP014
HBCM	Uterus; normal	pSport 1	LP014
HCDM	Testis; normal	pSport 1	LP014
HDJM	Brain; normal	pSport 1	LP014
HEFM	Adrenal Gland,normal	pSport 1	LP014
HBAA	Rectum normal	pSport 1	LP014
HFDM	Rectum tumour	pSport 1	LP014
HGAM	Colon, normal	pSport 1	LP014
HHMM	Colon, tumour	pSport 1	LP014
HCLB HCLC	Human Lung Cancer	Lambda Zap II	LP015
HRLA	L1 Cell line	ZAP Express	LP015
HHAM	Hypothalamus, Alzheimer's	pCMVSport 3.0	LP015
HKBA	Ku 812F Basophils Line	pSport 1	LP015
HS2S	Saos2, Dexamethosome Treated	pSport 1	LP016
HA5A	Lung Carcinoma A549 TNFalpha activated	pSport 1	LP016
HTFM	TF-1 Cell Line GM-CSF Treated	pSport 1	LP016
HYAS	Thyroid Tumour	pSport 1	LP016
HUTS	Larynx Normal	pSport 1	LP016
HXOA	Larynx Tumor	pSport 1	LP016
HEAH	Ea.hy.926 cell line	pSport 1	LP016
HINA	Adenocarcinoma Human	pSport 1	LP016
HRMA	Lung Mesothelium	pSport 1	LP016
HLCL	Human Pre-Differentiated Adipocytes	Uni-Zap XR	LP017
HS2A	Saos2 Cells	pSport 1	LP020
HS2I	Saos2 Cells; Vitamin D3 Treated	pSport 1	LP020
HUCM	CHME Cell Line, untreated	pSport 1	LP020
HEPN	Aryepiglottis Normal	pSport 1	LP020
HPSN	Sinus Piniformis Tumour	pSport 1	LP020
HNSA	Stomach Normal	pSport 1	LP020
HNSM	Stomach Tumour	pSport 1	LP020
HNLA	Liver Normal Met5No	pSport 1	LP020
HUTA	Liver Tumour Met 5 Tu	pSport 1	LP020
HOCN	Colon Normal	pSport 1	LP020
HOCT	Colon Tumor	pSport 1	LP020
HTNT	Tongue Tumour	pSport 1	LP020
HLXN	Larynx Normal	pSport 1	LP020
HLXT	Larynx Tumour	pSport 1	LP020
HTYN	Thymus	pSport 1	LP020
HPLN	Placenta	pSport 1	LP020

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HTNG	Tongue Normal	pSport 1	LP020
HZAA	Thyroid Normal (SDCA2 No)	pSport 1	LP020
HWES	Thyroid Thyroiditis	pSport 1	LP020
HFHD	Ficolled Human Stromal Cells, 5Fu treated	pTrip1Ex2	LP021
HFHM,HFHN	Ficolled Human Stromal Cells, Untreated	pTrip1Ex2	LP021
HPCI	Hep G2 Cells, lambda library	lambda Zap-CMV XR	LP021
HBCA,HBCB,HBCC	H. Lymph node breast Cancer	Uni-ZAP XR	LP021
HCOK	Chondrocytes	pSPORT1	LP022
HDCA, HDCB, HDCC	Dendritic Cells From CD34 Cells	pSPORT1	LP022
HDMA, HDMB	CD40 activated monocyte dendritic cells	pSPORT1	LP022
HDDM, HDDN, HDDO	LPS activated derived dendritic cells	pSPORT1	LP022
HPCR	Hep G2 Cells, PCR library	lambda Zap-CMV XR	LP022
HAAA, HAAB, HAAC	Lung, Cancer (4005313A3): Invasive Poorly Differentiated Lung Adenocarcinoma	pSPORT1	LP022
HIPA, HIPB, HIPC	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	pSPORT1	LP022
HOOH, HOOI	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	pSPORT1	LP022
HIDA	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HUJA,HUJB,HUJC,HUJD,HUJE	B-Cells	pCMVSport 3.0	LP022
HNOA,HNOB,HNOC,HNOD	Ovary, Normal: (9805C040R)	pSPORT1	LP022
HNLM	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HSCL	Stromal Cells	pSPORT1	LP022
HAAX	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenocarcinoma	pSPORT1	LP022
HUUA,HUUB,HUUC,HUUD	B-cells (unstimulated)	pTrip1Ex2	LP022
HWWA,HWWB,HWWC,HWWD,HWWE,HWWF,HWWG	B-cells (stimulated)	pSPORT1	LP022
HCCC	Colon, Cancer: (9808C064R)	pCMVSport 3.0	LP023
HPDO HPDP HPDQ HPDR HPD	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	pSport 1	LP023
HPCO HPCP HPCQ HPCT	Ovary, Cancer (15395A1F): Grade II Papillary Carcinoma	pSport 1	LP023
HOCM HOCO HOCP HOCQ	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	pSport 1	LP023
HCBM HCBN HCBO	Breast, Cancer: (4004943 A5)	pSport 1	LP023
HNBT HNBU HNBV	Breast, Normal: (4005522B2)	pSport 1	LP023
HBCP HBCQ	Breast, Cancer: (4005522 A2)	pSport 1	LP023
HBCJ	Breast, Cancer: (9806C012R)	pSport 1	LP023
HSAM HSAN	Stromal cells 3.88	pSport 1	LP023
HVCA HVCB HVCC HVCD	Ovary, Cancer: (4004332 A2)	pSport 1	LP023
HSCK HSEN HSEO	Stromal cells (HBM3.18)	pSport 1	LP023
HSCP HSCQ	stromal cell clone 2.5	pSport 1	LP023
HUXA	Breast Cancer: (4005385 A2)	pSport 1	LP023

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HCOM HCON HCOO HCOP HCOQ	Ovary, Cancer (4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	pSport 1	LP023
HBNM	Breast, Cancer: (9802C020E)	pSport 1	LP023
HVVA HVVB HVVC HVVD HVVE	Human Bone Marrow, treated	pSport 1	LP023

[0838] Two nonlimiting examples are provided below for isolating a particular clone from the deposited sample of plasmid cDNAs cited for that clone in Table 7. First, a plasmid is directly isolated by screening the clones using a polynucleotide probe corresponding to the nucleotide sequence of SEQ ID NO:X.

[0839] Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with ^{32}P-γ-ATP using T4 polynucleotide kinase and purified according to routine methods. (E.g., Maniatis et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press, Cold Spring, NY (1982).) The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., Molecular Cloning: A Laboratory Manual, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

[0840] Alternatively, two primers of 17-20 nucleotides derived from both ends of the nucleotide sequence of SEQ ID NO:X are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 µl of reaction mixture with 0.5 ug of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 µM each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-

Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

[0841] Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., Nucleic Acids Res. 21(7):1683-1684 (1993).)

[0842] Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

[0843] This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

[0844] This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide

[0845] A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the sequence corresponding to SEQ ID NO:X according to the method described in Example 1. (See also, Sambrook et al., Molecular Cloning: A Laboratory Manual, 2nd Edn., (1989), Cold Spring Harbor Laboratory Press).

Example 3: Tissue specific expression analysis

[0846] The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue and/or disease specific cDNA libraries. Libraries generated from a particular tissue are selected and the specific tissue expression pattern of EST groups or assembled contigs within these libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs and assembled contigs which show tissue specific expression are selected.

[0847] The original clone from which the specific EST sequence was generated, or in the case of an assembled contig, the clone from which the 5' most EST sequence was generated, is obtained from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured and then transferred in 96 or 384 well format to a nylon membrane (Schleicher and Scheull) generating an array filter of tissue specific clones. Housekeeping genes, maize genes, and known tissue specific genes are included on the filters. These targets can be used in signal normalization and to validate assay sensitivity. Additional targets are included to monitor probe length and specificity of hybridization.

[0848] Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed (e.g., ovarian, ovarian cancer, breast, breast cancer). The hybridization probes are purified by gel

exclusion chromatography, quantitated, and hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

[0849] Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are identified.

Example 4: Chromosomal Mapping of the Polynucleotides

[0850] An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions: 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions are analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

Example 5: Bacterial Expression of a Polypeptide

[0851] A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA).

This plasmid vector encodes antibiotic resistance (Amp^r), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

[0852] The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan^r). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

[0853] Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 ($O.D._{600}$) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

[0854] Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

[0855] Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8. The column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

[0856] The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA

column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM immidazole. Immidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4° C or frozen at -80° C.

[0857] In addition to the above expression vector, the present invention further includes an expression vector, called pHE4a (ATCC Accession Number 209645, deposited on February 25, 1998) which contains phage operator and promoter elements operatively linked to a polynucleotide of the present invention. This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (lacIq). The origin of replication (oriC) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter and operator sequences are made synthetically.

[0858] DNA can be inserted into the pHE4a by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

[0859] The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

Example 6: Purification of a Polypeptide from an Inclusion Body

[0860] The following alternative method can be used to purify a polypeptide expressed in *E coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

[0861] Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

[0862] The cells are then lysed by passing the solution through a microfluidizer (Microfuidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

[0863] The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

[0864] Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

[0865] To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16 μm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

[0866] Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of

tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0. Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant A_{280} monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

[0867] The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from Commassie blue stained 16% SDS-PAGE gel when 5 μg of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

Example 7: Cloning and Expression of a Polypeptide in a Baculovirus Expression System

[0868] In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak Drosophila promoter in the same orientation, followed by the polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

[0869] Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate,

as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., Virology 170:31-39 (1989).

[0870] Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

[0871] The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

[0872] The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("Geneclean" BIO 101 Inc., La Jolla, Ca.).

[0873] The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

[0874] Five μg of a plasmid containing the polynucleotide is co-transfected with 1.0 μg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA", Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417 (1987). One μg of BaculoGold™ virus DNA and 5 μg of the plasmid are mixed in a sterile well of a microtiter plate containing 50 μl of serum-free Grace's medium (Life Technologies Inc.,

Gaithersburg, MD). Afterwards, 10 µl Lipofectin plus 90 µl Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C for four days.

[0875] After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200 µl of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

[0876] To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5 µCi of ^{35}S-methionine and 5 µCi ^{35}S-cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

[0877] Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

Example 8: Expression of a Polypeptide in Mammalian Cells

[0878] The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing. Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLVI, HIVI and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

[0879] Suitable expression vectors for use in practicing the present invention include, for example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSport 2.0, and pCMVSport 3.0. Mammalian host cells that could be used include, human Hela, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

[0880] Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, or hygromycin allows the identification and isolation of the transfected cells.

[0881] The transfected gene can also be amplified to express large amounts of the encoded protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991).) Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown

in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

[0882] Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No.209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 41:521-530 (1985).) Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

[0883] Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

[0884] A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the vector does not need a second signal peptide. Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

[0885] The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("Geneclean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

[0886] The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

[0887] Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five μg of the expression plasmid pC6 or pC4 is cotransfected with 0.5 μg

of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates (Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of methotrexate plus 1 mg/ml G418. After about 10-14 days single clones are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then transferred to new 6-well plates containing even higher concentrations of methotrexate (1 μM, 2 μM, 5 μM, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200 μM. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

Example 9: Protein Fusions

[0888] The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988).) Similarly, fusion to IgG-1, IgG-3, and albumin increases the halflife time *in vivo*. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

[0889] Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

[0890] For example, if pC4 (ATCC Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without a stop codon, otherwise a fusion protein will not be produced.

[0891] If the naturally occurring signal sequence is used to produce the polypeptide of the present invention, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

Human IgG Fc region:

GGGATCCGGAGCCCAAATCTTCTGACAAAACTCACACATGCCCACCGT
GCCCAGCACCTGAATTCGAGGGTGCACCGTCAGTCTTCCTCTTCCCCCC
AAAACCCAAGGACACCCTCATGATCTCCCGGACTCCTGAGGTCACATG
CGTGGTGGTGGACGTAAGCCACGAAGACCCTGAGGTCAAGTTCAACTG
GTACGTGGACGGCGTGGAGGTGCATAATGCCAAGACAAAGCCGCGGG
AGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCCTCACCGTCC
TGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCA
ACAAAGCCCTCCCAACCCCCATCGAGAAAACCATCTCCAAAGCCAAAG
GGCAGCCCCGAGAACCACAGGTGTACACCCTGCCCCCATCCCGGGATG
AGCTGACCAAGAACCAGGTCAGCCTGACCTGCCTGGTCAAAGGCTTCT
ATCCAAGCGACATCGCCGTGGAGTGGGAGAGCAATGGGCAGCCGGAG
AACAACTACAAGACCACGCCTCCCGTGCTGGACTCCGACGGCTCCTTCT
TCCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGA

ACGTCTTCTCATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACAC
GCAGAAGAGCCTCTCCCTGTCTCCGGGTAAATGAGTGCGACGGCCGCG
ACTCTAGAGGAT (SEQ ID NO: 1)

Example 10: Production of an Antibody from a Polypeptide

Hybridoma Technology

[0892] The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing «Abbreviated_Name_of_HGS_Clone» are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of «Abbreviated_Name_of_HGS_Clone» is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

[0893] Monoclonal antibodies specific for «Abbreviated_Name_of_HGS_Clone» are prepared using hybridoma technology (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol. 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In general, an animal (preferably a mouse) is immunized with «Abbreviated_Name_of_HGS_Clone» or, more preferably, with a secreted «Abbreviated_Name_of_HGS_Clone»-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

[0894] The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained

through such a selection are then assayed to identify clones which secrete antibodies capable of binding the «Abbreviated_Name_of_HGS_Clone».

[0895] Alternatively, additional antibodies capable of binding to «Abbreviated_Name_of_HGS_Clone» can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody whose ability to bind to the «Abbreviated_Name_of_HGS_Clone»-specific antibody can be blocked by «Abbreviated_Name_of_HGS_Clone». Such antibodies comprise anti-idiotypic antibodies to the «Abbreviated_Name_of_HGS_Clone»-specific antibody and are used to immunize an animal to induce formation of further «Abbreviated_Name_of_HGS_Clone»-specific antibodies.

[0896] For *in vivo* use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized antibodies are known in the art and are discussed herein. (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., International Publication No. WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985).)

Isolation Of Antibody Fragments Directed Against «Abbreviated_Name_of_HGS_Clone» From A Library Of scFvs

[0897] Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against «Abbreviated_Name_of_HGS_Clone» to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

[0898] *Rescue of the Library.* A library of scFvs is constructed from the RNA of human PBLs as described in International Publication No. WO 92/01047. To rescue phage displaying antibody fragments, approximately 10^9 *E. coli* harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 μg/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to inoculate 50 ml of 2xTY-AMP-GLU, 2 x 108 TU of delta gene 3 helper (M13 delta gene III, see International Publication No. WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 μg/ml ampicillin and 50 ug/ml kanamycin and grown overnight. Phage are prepared as described in International Application No. WO 92/01047.

[0899] M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37° C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 μg ampicillin/ml and 25 μg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations (Sambrook et al., 1990), resuspended in 2 ml PBS and passed through a 0.45 μm filter (Minisart NML; Sartorius) to give a final concentration of approximately 10^{13} transducing units/ml (ampicillin-resistant clones).

[0900] *Panning of the Library.* Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100 μg/ml or 10 μg/ml of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately 10^{13} TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15

minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1% glucose and 100 μg/ml ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

[0901] *Characterization of Binders*. Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with 10 pg/ml of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., International Application No. WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide

[0902] RNA isolated from entire families or individual patients presenting with a phenotype of interest (such as a disease) is isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing primers surrounding regions of interest in SEQ ID NO:X; and/or the nucleotide sequence of the cDNA contained in Clone ID NO:Z. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).

[0903] PCR products are then sequenced using primers labeled at their 5' end with T4 polynucleotide kinase, employing SequiTherm Polymerase (Epicentre Technologies). The intron-exon boundaries of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations are then cloned and sequenced to validate the results of the direct sequencing.

[0904] PCR products are cloned into T-tailed vectors as described in Holton et al., Nucleic Acids Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals are identified by mutations not present in unaffected individuals.

[0905] Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenindeoxy-uridine 5'-triphosphate (Boehringer Manheim), and FISH performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

[0906] Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991).) Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an associated disease.

Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample

[0907] A polypeptide of the present invention can be detected in a biological sample, and if an increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

[0908] For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

[0909] The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The plates are then washed three times with deionized or distilled water to remove unbound polypeptide.

[0910] Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbound conjugate.

[0911] Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the standard curve.

Example 13: Formulation

[0912] The invention also provides methods of treatment and/or prevention of diseases or disorders (such as, for example, any one or more of the diseases or disorders disclosed herein) by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

[0913] The Therapeutic will be formulated and dosed in a fashion consistent with good medical practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration, the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such considerations.

[0914] As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1ug/kg/day to 10 mg/kg/day of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 mg/kg/day, and most preferably for humans between about 0.01 and 1 mg/kg/day for the hormone. If given continuously, the Therapeutic is typically administered at a dose rate of about 1 ug/kg/hour to about 50 ug/kg/hour, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following treatment for responses to occur appears to vary depending on the desired effect.

[0915] Therapeutics can be are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

[0916] Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally, rectally, parenterally, intracistemally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), bucally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

[0917] Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or mirocapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

[0918] Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., Biopolymers 22:547-556 (1983)), poly (2- hydroxyethyl methacrylate) (Langer et al., J. Biomed. Mater. Res. 15:167-277 (1981), and Langer, Chem. Tech. 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., Id.) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

[0919] Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (*see* generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., Proc. Natl. Acad. Sci. (USA) 82:3688-3692 (1985); Hwang et al., Proc. Natl. Acad. Sci.(USA) 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800

Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

[0920] In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)).

[0921] Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

[0922] For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to the Therapeutic.

[0923] Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

[0924] The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate, succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including cellulose or its derivatives, glucose, manose, or dextrins;

chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

[0925] The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

[0926] Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

[0927] Therapeutics ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic using bacteriostatic Water-for-Injection.

[0928] The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition, the Therapeutics may be employed in conjunction with other therapeutic compounds.

[0929] The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG (e.g., THERACYS®), MPL and nonviable prepartions of *Corynebacterium parvum*. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with

QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diptheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

[0930] The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the Therapeutics of the invention, include but not limited to, chemotherapeutic agents, antibiotics, steroidal and non-steroidal anti-inflammatories, conventional immunotherapeutic agents, and/or therapeutic treatments described below. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

[0931] In certain embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and/or protease inhibitors (PIs). NRTIs that may be administered in combination with the

Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™ (didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERIT™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). NNRTIs that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, VIRAMUNE™ (nevirapine), RESCRIPTOR™ (delavirdine), and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIXIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

[0932] Additional NRTIs include LODENOSINE™ (F-ddA; an acid-stable adenosine NRTI; Triangle/Abbott; COVIRACIL™ (emtricitabine/FTC; structurally related to lamivudine (3TC) but with 3- to 10-fold greater activity *in vitro*; Triangle/Abbott); dOTC (BCH-10652, also structurally related to lamivudine but retains activity against a substantial proportion of lamivudine-resistant isolates; Biochem Pharma); Adefovir (refused approval for anti-HIV therapy by FDA; Gilead Sciences); PREVEON® (Adefovir Dipivoxil, the active prodrug of adefovir; its active form is PMEA-pp); TENOFOVIR™ (bis-POC PMPA, a PMPA prodrug; Gilead); DAPD/DXG (active metabolite of DAPD; Triangle/Abbott); D-D4FC (related to 3TC, with activity against AZT/3TC-resistant virus); GW420867X (Glaxo Wellcome); ZIAGEN™ (abacavir/159U89; Glaxo Wellcome Inc.); CS-87 (3'azido-2',3'-dideoxyuridine; WO 99/66936); and S-acyl-2-thioethyl (SATE)-bearing prodrug forms of β-L-FD4C and β-L-FddC (WO 98/17281).

[0933] Additional NNRTIs include COACTINON™ (Emivirine/MKC-442, potent NNRTI of the HEPT class; Triangle/Abbott); CAPRAVIRINE™ (AG-1549/S-1153, a next generation NNRTI with activity against viruses containing the K103N mutation; Agouron); PNU-142721 (has 20- to 50-fold greater activity than its predecessor delavirdine and is active against K103N mutants; Pharmacia & Upjohn); DPC-961 and

DPC-963 (second-generation derivatives of efavirenz, designed to be active against viruses with the K103N mutation; DuPont); GW-420867X (has 25-fold greater activity than HBY097 and is active against K103N mutants; Glaxo Wellcome); CALANOLIDE A (naturally occurring agent from the latex tree; active against viruses containing either or both the Y181C and K103N mutations); and Propolis (WO 99/49830).

[0934] Additional protease inhibitors include LOPINAVIR™ (ABT378/r; Abbott Laboratories); BMS-232632 (an azapeptide; Bristol-Myres Squibb); TIPRANAVIR™ (PNU-140690, a non-peptic dihydropyrone; Pharmacia & Upjohn); PD-178390 (a nonpeptidic dihydropyrone; Parke-Davis); BMS 232632 (an azapeptide; Bristol-Myers Squibb); L-756,423 (an indinavir analog; Merck); DMP-450 (a cyclic urea compound; Avid & DuPont); AG-1776 (a peptidomimetic with *in vitro* activity against protease inhibitor-resistant viruses; Agouron); VX-175/GW-433908 (phosphate prodrug of amprenavir; Vertex & Glaxo Welcome); CGP61755 (Ciba); and AGENERASE™ (amprenavir; Glaxo Wellcome Inc.).

[0935] Additional antiretroviral agents include fusion inhibitors/gp41 binders. Fusion inhibitors/gp41 binders include T-20 (a peptide from residues 643-678 of the HIV gp41 transmembrane protein ectodomain which binds to gp41 in its resting state and prevents transformation to the fusogenic state; Trimeris) and T-1249 (a second-generation fusion inhibitor; Trimeris).

[0936] Additional antiretroviral agents include fusion inhibitors/chemokine receptor antagonists. Fusion inhibitors/chemokine receptor antagonists include CXCR4 antagonists such as AMD 3100 (a bicyclam), SDF-1 and its analogs, and ALX40-4C (a cationic peptide), T22 (an 18 amino acid peptide; Trimeris) and the T22 analogs T134 and T140; CCR5 antagonists such as RANTES (9-68), AOP-RANTES, NNY-RANTES, and TAK-779; and CCR5/CXCR4 antagonists such as NSC 651016 (a distamycin analog). Also included are CCR2B, CCR3, and CCR6 antagonists. Chemokine recpetor agonists such as RANTES, SDF-1, MIP-1α, MIP-1β, etc., may also inhibit fusion.

[0937] Additional antiretroviral agents include integrase inhibitors. Integrase inhibitors include dicaffeoylquinic (DFQA) acids; L-chicoric acid (a dicaffeoyltartaric (DCTA) acid); quinalizarin (QLC) and related anthraquinones; ZINTEVIR™ (AR 177, an

oligonucleotide that probably acts at cell surface rather than being a true integrase inhibitor; Arondex); and naphthols such as those disclosed in WO 98/50347.

[0938] Additional antiretroviral agents include hydroxyurea-like compunds such as BCX-34 (a purine nucleoside phosphorylase inhibitor; Biocryst); ribonucleotide reductase inhibitors such as DIDOX™ (Molecules for Health); inosine monophosphate dehydrogenase (IMPDH) inhibitors sucha as VX-497 (Vertex); and myvopholic acids such as CellCept (mycophenolate mofetil; Roche).

[0939] Additional antiretroviral agents include inhibitors of viral integrase, inhibitors of viral genome nuclear translocation such as arylene bis(methylketone) compounds; inhibitors of HIV entry such as AOP-RANTES, NNY-RANTES, RANTES-IgG fusion protein, soluble complexes of RANTES and glycosaminoglycans (GAG), and AMD-3100; nucleocapsid zinc finger inhibitors such as dithiane compounds; targets of HIV Tat and Rev; and pharmacoenhancers such as ABT-378.

[0940] Other antiretroviral therapies and adjunct therapies include cytokines and lymphokines such as MIP-1α, MIP-1β, SDF-1α, IL-2, PROLEUKIN™ (aldesleukin/L2-7001; Chiron), IL-4, IL-10, IL-12, and IL-13; interferons such as IFN-α2a; antagonists of TNFs, NFκB, GM-CSF, M-CSF, and IL-10; agents that modulate immune activation such as cyclosporin and prednisone; vaccines such as Remune™ (HIV Immunogen), APL 400-003 (Apollon), recombinant gp120 and fragments, bivalent (B/E) recombinant envelope glycoprotein, rgp120CM235, MN rgp120, SF-2 rgp120, gp120/soluble CD4 complex, Delta JR-FL protein, branched synthetic peptide derived from discontinuous gp120 C3/C4 domain, fusion-competent immunogens, and Gag, Pol, Nef, and Tat vaccines; gene-based therapies such as genetic suppressor elements (GSEs; WO 98/54366), and intrakines (genetically modified CC chemokines targetted to the ER to block surface expression of newly synthesized CCR5 (Yang *et al., PNAS 94*:11567-72 (1997); Chen *et al., Nat. Med. 3*:1110-16 (1997)); antibodies such as the anti-CXCR4 antibody 12G5, the anti-CCR5 antibodies 2D7, 5C7, PA8, PA9, PA10, PA11, PA12, and PA14, the anti-CD4 antibodies Q4120 and RPA-T4, the anti-CCR3 antibody 7B11, the anti-gp120 antibodies 17b, 48d, 447-52D, 257-D, 268-D and 50.1, anti-Tat antibodies, anti-TNF-α antibodies, and monoclonal antibody 33A; aryl hydrocarbon (AH) receptor agonists and antagonists such as TCDD, 3,3',4,4',5-pentachlorobiphenyl, 3,3',4,4'-tetrachlorobiphenyl, and α-

naphthoflavone (WO 98/30213); and antioxidants such as γ-L-glutamyl-L-cysteine ethyl ester (γ-GCE; WO 99/56764).

[0941] In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

[0942] In other embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICOLVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™, FOSCARNET™, and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of the invention are used in any combination with FLUCONAZOLE™,

ITRACONAZOLE™, and/or KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

[0943] In a further embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases, aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol, cephalosporins, ciprofloxacin, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rapamycin, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamthoxazole, and vancomycin.

[0944] In other embodiments, Therapeutics of the invention are administered in combination with immunosuppressive agents. Immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells. Other immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, prednisolone, methotrexate, thalidomide, methoxsalen, rapamycin, leflunomide, mizoribine (BREDININ™), brequinar, deoxyspergualin, and azaspirane (SKF 105685), ORTHOCLONE OKT® 3 (muromonab-CD3), SANDIMMUNE™, NEORAL™, SANGDYA™ (cyclosporine), PROGRAF® (FK506, tacrolimus), CELLCEPT® (mycophenolate motefil, of which the active metabolite is mycophenolic acid), IMURAN™ (azathioprine), glucocorticosteroids,

adrenocortical steroids such as DELTASONE™ (prednisone) and HYDELTRASOL™ (prednisolone), FOLEX™ and MEXATE™ (methotrxate), OXSORALEN-ULTRA™ (methoxsalen) and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be used to prevent rejection of organ or bone marrow transplantation.

[0945] In an additional embodiment, Therapeutics of the invention are administered alone or in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, ATGAM™ (antithymocyte glubulin), and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin preparations in transplantation therapy (e.g., bone marrow transplant).

[0946] In certain embodiments, the Therapeutics of the invention are administered alone or in combination with an anti-inflammatory agent. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, corticosteroids (e.g. betamethasone, budesonide, cortisone, dexamethasone, hydrocortisone, methylprednisolone, prednisolone, prednisone, and triamcinolone), nonsteroidal anti-inflammatory drugs (e.g., diclofenac, diflunisal, etodolac, fenoprofen, floctafenine, flurbiprofen, ibuprofen, indomethacin, ketoprofen, meclofenamate, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, phenylbutazone, piroxicam, sulindac, tenoxicam, tiaprofenic acid, and tolmetin.), as well as antihistamines, aminoarylcarboxylic acid derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline, perisoxal, pifoxime, proquazone, proxazole, and tenidap.

[0947] In an additional embodiment, the compositions of the invention are administered alone or in combination with an anti-angiogenic agent. Anti-angiogenic agents that may be administered with the compositions of the invention include, but are

not limited to, Angiostatin (Entremed, Rockville, MD), Troponin-1 (Boston Life Sciences, Boston, MA), anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel (Taxol), Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, VEGI, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

[0948] Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

[0949] Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

[0950] Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

[0951] A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include, but are not limited to, platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., Cancer Res. 51:22-26, (1991)); Sulphated Polysaccharide

Peptidoglycan Complex (SP- PG) (the function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., J. Bio. Chem. 267:17321-17326, (1992)); Chymostatin (Tomkinson et al., Biochem J. 286:475-480, (1992)); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., Nature 348:555-557, (1990)); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, J. Clin. Invest. 79:1440-1446, (1987)); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., J. Biol. Chem. 262(4):1659-1664, (1987)); Bisantrene (National Cancer Institute); Lobenzarit disodium (N-(2)-carboxyphenyl-4- chloroanthronilic acid disodium or "CCA"; (Takeuchi et al., Agents Actions 36:312-316, (1992)); and metalloproteinase inhibitors such as BB94.

[0952] Additional anti-angiogenic factors that may also be utilized within the context of the present invention include Thalidomide, (Celgene, Warren, NJ); Angiostatic steroid; AGM-1470 (H. Brem and J. Folkman *J Pediatr. Surg.* 28:445-51 (1993)); an integrin alpha v beta 3 antagonist (C. Storgard et al., *J Clin. Invest.* 103:47-54 (1999)); carboxynaminolmidazole; Carboxyamidotriazole (CAI) (National Cancer Institute, Bethesda, MD); Conbretastatin A-4 (CA4P) (OXiGENE, Boston, MA); Squalamine (Magainin Pharmaceuticals, Plymouth Meeting, PA); TNP-470, (Tap Pharmaceuticals, Deerfield, IL); ZD-0101 AstraZeneca (London, UK); APRA (CT2584); Benefin, Byrostatin-1 (SC339555); CGP-41251 (PKC 412); CM101; Dexrazoxane (ICRF187); DMXAA; Endostatin; Flavopridiol; Genestein; GTE; ImmTher; Iressa (ZD1839); Octreotide (Somatostatin); Panretin; Penacillamine; Photopoint; PI-88; Prinomastat (AG-3340) Purlytin; Suradista (FCE26644); Tamoxifen (Nolvadex); Tazarotene; Tetrathiomolybdate; Xeloda (Capecitabine); and 5-Fluorouracil.

[0953] Anti-angiogenic agents that may be administed in combination with the compounds of the invention may work through a variety of mechanisms including, but not limited to, inhibiting proteolysis of the extracellular matrix, blocking the function of endothelial cell-extracellular matrix adhesion molecules, by antagonizing the function of

angiogenesis inducers such as growth factors, and inhibiting integrin receptors expressed on proliferating endothelial cells. Examples of anti-angiogenic inhibitors that interfere with extracellular matrix proteolysis and which may be administered in combination with the compositons of the invention include, but are not lmited to, AG-3340 (Agouron, La Jolla, CA), BAY-12-9566 (Bayer, West Haven, CT), BMS-275291 (Bristol Myers Squibb, Princeton, NJ), CGS-27032A (Novartis, East Hanover, NJ), Marimastat (British Biotech, Oxford, UK), and Metastat (Aeterna, St-Foy, Quebec). Examples of anti-angiogenic inhibitors that act by blocking the function of endothelial cell-extracellular matrix adhesion molecules and which may be administered in combination with the compositons of the invention include, but are not lmited to, EMD-121974 (Merck KcgaA Darmstadt, Germany) and Vitaxin (Ixsys, La Jolla, CA/Medimmune, Gaithersburg, MD). Examples of anti-angiogenic agents that act by directly antagonizing or inhibiting angiogenesis inducers and which may be administered in combination with the compositons of the invention include, but are not lmited to, Angiozyme (Ribozyme, Boulder, CO), Anti-VEGF antibody (Genentech, S. San Francisco, CA), PTK-787/ZK-225846 (Novartis, Basel, Switzerland), SU-101 (Sugen, S. San Francisco, CA), SU-5416 (Sugen/ Pharmacia Upjohn, Bridgewater, NJ), and SU-6668 (Sugen). Other anti-angiogenic agents act to indirectly inhibit angiogenesis. Examples of indirect inhibitors of angiogenesis which may be administered in combination with the compositons of the invention include, but are not limited to, IM-862 (Cytran, Kirkland, WA), Interferon-alpha, IL-12 (Roche, Nutley, NJ), and Pentosan polysulfate (Georgetown University, Washington, DC).

[0954] In particular embodiments, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of an autoimmune disease, such as for example, an autoimmune disease described herein.

[0955] In a particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of arthritis. In a more particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of rheumatoid arthritis.

[0956] In another embodiment, the polynucleotides encoding a polypeptide of the present invention are administered in combination with an angiogenic protein, or polynucleotides encoding an angiogenic protein. Examples of angiogenic proteins that may be administered with the compositions of the invention include, but are not limited to, acidic and basic fibroblast growth factors, VEGF-1, VEGF-2, VEGF-3, epidermal growth factor alpha and beta, platelet-derived endothelial cell growth factor, platelet-derived growth factor, tumor necrosis factor alpha, hepatocyte growth factor, insulin-like growth factor, colony stimulating factor, macrophage colony stimulating factor, granulocyte/macrophage colony stimulating factor, and nitric oxide synthase.

[0957] In additional embodiments, compostions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to alkylating agents such as nitrogen mustards (for example, Mechlorethamine, cyclophosphamide, Cyclophosphamide Ifosfamide, Melphalan (L-sarcolysin), and Chlorambucil), ethylenimines and methylmelamines (for example, Hexamethylmelamine and Thiotepa), alkyl sulfonates (for example, Busulfan), nitrosoureas (for example, Carmustine (BCNU), Lomustine (CCNU), Semustine (methyl-CCNU), and Streptozocin (streptozotocin)), triazenes (for example, Dacarbazine (DTIC; dimethyltriazenoimidazolecarboxamide)), folic acid analogs (for example, Methotrexate (amethopterin)), pyrimidine analogs (for example, Fluorouacil (5-fluorouracil; 5-FU), Floxuridine (fluorodeoxyuridine; FudR), and Cytarabine (cytosine arabinoside)), purine analogs and related inhibitors (for example, Mercaptopurine (6-mercaptopurine; 6-MP), Thioguanine (6-thioguanine; TG), and Pentostatin (2'-deoxycoformycin)), vinca alkaloids (for example, Vinblastine (VLB, vinblastine sulfate) and Vincristine (vincristine sulfate)), epipodophyllotoxins (for example, Etoposide and Teniposide), antibiotics (for example, Dactinomycin (actinomycin D), Daunorubicin (daunomycin; rubidomycin), Doxorubicin, Bleomycin, Plicamycin (mithramycin), and Mitomycin (mitomycin C), enzymes (for example, L-Asparaginase), biological response modifiers (for example, Interferon-alpha and interferon-alpha-2b), platinum coordination compounds (for example, Cisplatin (cis-DDP) and Carboplatin), anthracenedione (Mitoxantrone), substituted ureas (for example, Hydroxyurea), methylhydrazine derivatives (for example, Procarbazine (N-

methylhydrazine; MIH), adrenocorticosteroids (for example, Prednisone), progestins (for example, Hydroxyprogesterone caproate, Medroxyprogesterone, Medroxyprogesterone acetate, and Megestrol acetate), estrogens (for example, Diethylstilbestrol (DES), Diethylstilbestrol diphosphate, Estradiol, and Ethinyl estradiol), antiestrogens (for example, Tamoxifen), androgens (Testosterone proprionate, and Fluoxymesterone), antiandrogens (for example, Flutamide), gonadotropin-releasing horomone analogs (for example, Leuprolide), other hormones and hormone analogs (for example, methyltestosterone, estramustine, estramustine phosphate sodium, chlorotrianisene, and testolactone), and others (for example, dicarbazine, glutamic acid, and mitotane).

[0958] In one embodiment, the compositions of the invention are administered in combination with one or more of the following drugs: infliximab (also known as Remicade™ Centocor, Inc.), Trocade (Roche, RO-32-3555), Leflunomide (also known as Arava™ from Hoechst Marion Roussel), Kineret™ (an IL-1 Receptor antagonist also known as Anakinra from Amgen, Inc.).

[0959] In a specific embodiment, compositions of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or combination of one or more of the components of CHOP. In one embodiment, the compositions of the invention are administered in combination with anti-CD20 antibodies, human monoclonal anti-CD20 antibodies. In another embodiment, the compositions of the invention are administered in combination with anti-CD20 antibodies and CHOP, or anti-CD20 antibodies and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are administered in combination with Rituximab. In a further embodiment, compositions of the invention are administered with Rituximab and CHOP, or Rituximab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are administered in combination with tositumomab. In a further embodiment, compositions of the invention are administered with tositumomab and CHOP, or tositumomab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. The anti-CD20 antibodies may optionally be associated with radioisotopes, toxins or cytotoxic prodrugs.

[0960] In another specific embodiment, the compositions of the invention are administered in combination Zevalin™. In a further embodiment, compositions of the invention are administered with Zevalin™ and CHOP, or Zevalin™ and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. Zevalin™ may be associated with one or more radisotopes. Particularly preferred isotopes are ^{90}Y and ^{111}In.

[0961] In an additional embodiment, the Therapeutics of the invention are administered in combination with cytokines. Cytokines that may be administered with the Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

[0962] In one embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered with the Therapeutics of the invention include, but are not limited to, soluble forms of TNF-alpha, lymphotoxin-alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), OPG, and neutrokine-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-IBB, TR2 (International Publication No. WO 96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TRANK, TR9 (International Publication No. WO 98/56892),TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

[0963] In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be

administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PlGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PlGF-2), as disclosed in Hauser et al., Growth Factors, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as disclosed in German Patent Number DE19639601. The above mentioned references are herein incorporated by reference in their entireties.

[0964] In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

[0965] In an additional embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, granulocyte macrophage colony stimulating factor (GM-CSF) (sargramostim, LEUKINE™, PROKINE™), granulocyte colony stimulating factor (G-CSF) (filgrastim, NEUPOGEN™), macrophage colony stimulating factor (M-CSF, CSF-1) erythropoietin (epoetin alfa, EPOGEN™, PROCRIT™), stem cell factor (SCF, c-kit ligand, steel factor), megakaryocyte colony stimulating factor, PIXY321 (a GMCSF/IL-3

fusion protein), interleukins, especially any one or more of IL-1 through IL-12, interferon-gamma, or thrombopoietin.

[0966] In certain embodiments, Therapeutics of the present invention are administered in combination with adrenergic blockers, such as, for example, acebutolol, atenolol, betaxolol, bisoprolol, carteolol, labetalol, metoprolol, nadolol, oxprenolol, penbutolol, pindolol, propranolol, sotalol, and timolol.

[0967] In another embodiment, the Therapeutics of the invention are administered in combination with an antiarrhythmic drug (e.g., adenosine, amidoarone, bretylium, digitalis, digoxin, digitoxin, diliazem, disopyramide, esmolol, flecainide, lidocaine, mexiletine, moricizine, phenytoin, procainamide, N-acetyl procainamide, propafenone, propranolol, quinidine, sotalol, tocainide, and verapamil).

[0968] In another embodiment, the Therapeutics of the invention are administered in combination with diuretic agents, such as carbonic anhydrase-inhibiting agents (e.g., acetazolamide, dichlorphenamide, and methazolamide), osmotic diuretics (e.g., glycerin, isosorbide, mannitol, and urea), diuretics that inhibit Na^+-K^+-$2Cl^-$ symport (e.g., furosemide, bumetanide, azosemide, piretanide, tripamide, ethacrynic acid, muzolimine, and torsemide), thiazide and thiazide-like diuretics (e.g., bendroflumethiazide, benzthiazide, chlorothiazide, hydrochlorothiazide, hydroflumethiazide, methyclothiazide, polythiazide, trichormethiazide, chlorthalidone, indapamide, metolazone, and quinethazone), potassium sparing diuretics (e.g., amiloride and triamterene), and mineralcorticoid receptor antagonists (e.g., spironolactone, canrenone, and potassium canrenoate).

[0969] In one embodiment, the Therapeutics of the invention are administered in combination with treatments for endocrine and/or hormone imbalance disorders. Treatments for endocrine and/or hormone imbalance disorders include, but are not limited to, ^{127}I, radioactive isotopes of iodine such as ^{131}I and ^{123}I; recombinant growth hormone, such as HUMATROPE™ (recombinant somatropin); growth hormone analogs such as PROTROPIN™ (somatrem); dopamine agonists such as PARLODEL™ (bromocriptine); somatostatin analogs such as SANDOSTATIN™ (octreotide); gonadotropin preparations such as PREGNYL™, A.P.L.™ and PROFASI™ (chorionic gonadotropin (CG)), PERGONAL™ (menotropins), and METRODIN™ (urofollitropin (uFSH)); synthetic

human gonadotropin releasing hormone preparations such as FACTREL™ and LUTREPULSE™ (gonadorelin hydrochloride); synthetic gonadotropin agonists such as LUPRON™ (leuprolide acetate), SUPPRELIN™ (histrelin acetate), SYNAREL™ (nafarelin acetate), and ZOLADEX™ (goserelin acetate); synthetic preparations of thyrotropin-releasing hormone such as RELEFACT TRH™ and THYPINONE™ (protirelin); recombinant human TSH such as THYROGEN™; synthetic preparations of the sodium salts of the natural isomers of thyroid hormones such as L-T_4™, SYNTHROID™ and LEVOTHROID™ (levothyroxine sodium), L-T_3™, CYTOMEL™ and TRIOSTAT™ (liothyroine sodium), and THYROLAR™ (liotrix); antithyroid compounds such as 6-*n*-propylthiouracil (propylthiouracil), 1-methyl-2-mercaptoimidazole and TAPAZOLE™ (methimazole), NEO-MERCAZOLE™ (carbimazole); beta-adrenergic receptor antagonists such as propranolol and esmolol; Ca^{2+} channel blockers; dexamethasone and iodinated radiological contrast agents such as TELEPAQUE™ (iopanoic acid) and ORAGRAFIN™ (sodium ipodate); estrogens or congugated estrogens such as ESTRACE™ (estradiol), ESTINYL™ (ethinyl estradiol), PREMARIN™, ESTRATAB™, ORTHO-EST™, OGEN™ and estropipate (estrone), ESTROVIS™ (quinestrol), ESTRADERM™ (estradiol), DELESTROGEN™ and VALERGEN™ (estradiol valerate), DEPO-ESTRADIOL CYPIONATE™ and ESTROJECT LA™ (estradiol cypionate); antiestrogens such as NOLVADEX™ (tamoxifen), SEROPHENE™ and CLOMID™ (clomiphene); progestins such as DURALUTIN™ (hydroxyprogesterone caproate), MPA™ and DEPO-PROVERA™ (medroxyprogesterone acetate), PROVERA™ and CYCRIN™ (MPA), MEGACE™ (megestrol acetate), NORLUTIN™ (norethindrone), and NORLUTATE™ and AYGESTIN™ (norethindrone acetate); progesterone implants such as NORPLANT SYSTEM™ (subdermal implants of norgestrel); antiprogestins such as RU 486™ (mifepristone); hormonal contraceptives such as ENOVID™ (norethynodrel plus mestranol), PROGESTASERT™ (intrauterine device that releases progesterone), LOESTRIN™, BREVICON™, MODICON™, GENORA™, NELONA™, NORINYL™, OVACON-35™ and OVACON-50™ (ethinyl estradiol/norethindrone), LEVLEN™, NORDETTE™, TRI-LEVLEN™ and TRIPHASIL-21™ (ethinyl estradiol/levonorgestrel)

LO/OVRAL™ and OVRAL™ (ethinyl estradiol/norgestrel), DEMULEN™ (ethinyl estradiol/ethynodiol diacetate), NORINYL™, ORTHO-NOVUM™, NORETHIN™, GENORA™, and NELOVA™ (norethindrone/mestranol), DESOGEN™ and ORTHO-CEPT™ (ethinyl estradiol/desogestrel), ORTHO-CYCLEN™ and ORTHO-TRICYCLEN™ (ethinyl estradiol/norgestimate), MICRONOR™ and NOR-QD™ (norethindrone), and OVRETTE™ (norgestrel); testosterone esters such as methenolone acetate and testosterone undecanoate; parenteral and oral androgens such as TESTOJECT-50™ (testosterone), TESTEX™ (testosterone propionate), DELATESTRYL™ (testosterone enanthate), DEPO-TESTOSTERONE™ (testosterone cypionate), DANOCRINE™ (danazol), HALOTESTIN™ (fluoxymesterone), ORETON METHYL™, TESTRED™ and VIRILON™ (methyltestosterone), and OXANDRIN™ (oxandrolone); testosterone transdermal systems such as TESTODERM™; androgen receptor antagonist and 5-alpha-reductase inhibitors such as ANDROCUR™ (cyproterone acetate), EULEXIN™ (flutamide), and PROSCAR™ (finasteride); adrenocorticotropic hormone preparations such as CORTROSYN™ (cosyntropin); adrenocortical steroids and their synthetic analogs such as ACLOVATE™ (alclometasone dipropionate), CYCLOCORT™ (amcinonide), BECLOVENT™ and VANCERIL™ (beclomethasone dipropionate), CELESTONE™ (betamethasone), BENISONE™ and UTICORT™ (betamethasone benzoate), DIPROSONE™ (betamethasone dipropionate), CELESTONE PHOSPHATE™ (betamethasone sodium phosphate), CELESTONE SOLUSPAN™ (betamethasone sodium phosphate and acetate), BETA-VAL™ and VALISONE™ (betamethasone valerate), TEMOVATE™ (clobetasol propionate), CLODERM™ (clocortolone pivalate), CORTEF™ and HYDROCORTONE™ (cortisol (hydrocortisone)), HYDROCORTONE ACETATE™ (cortisol (hydrocortisone) acetate), LOCOID™ (cortisol (hydrocortisone) butyrate), HYDROCORTONE PHOSPHATE™ (cortisol (hydrocortisone) sodium phosphate), A-HYDROCORT™ and SOLU CORTEF™ (cortisol (hydrocortisone) sodium succinate), WESTCORT™ (cortisol (hydrocortisone) valerate), CORTISONE ACETATE™ (cortisone acetate), DESOWEN™ and TRIDESILON™ (desonide), TOPICORT™ (desoximetasone), DECADRON™ (dexamethasone), DECADRON LA™

(dexamethasone acetate), DECADRON PHOSPHATE™ and HEXADROL PHOSPHATE™ (dexamethasone sodium phosphate), FLORONE™ and MAXIFLOR™ (diflorasone diacetate), FLORINEF ACETATE™ (fludrocortisone acetate), AEROBID™ and NASALIDE™ (flunisolide), FLUONID™ and SYNALAR™ (fluocinolone acetonide), LIDEX™ (fluocinonide), FLUOR-OP™ and FML™ (fluorometholone), CORDRAN™ (flurandrenolide), HALOG™ (halcinonide), HMS LIZUIFILM™ (medrysone), MEDROL™ (methylprednisolone), DEPO-MEDROL™ and MEDROL ACETATE™ (methylprednisone acetate), A-METHAPRED™ and SOLUMEDROL™ (methylprednisolone sodium succinate), ELOCON™ (mometasone furoate), HALDRONE™ (paramethasone acetate), DELTA-CORTEF™ (prednisolone), ECONOPRED™ (prednisolone acetate), HYDELTRASOL™ (prednisolone sodium phosphate), HYDELTRA-T.B.A™ (prednisolone tebutate), DELTASONE™ (prednisone), ARISTOCORT™ and KENACORT™ (triamcinolone), KENALOG™ (triamcinolone acetonide), ARISTOCORT™ and KENACORT DIACETATE™ (triamcinolone diacetate), and ARISTOSPAN™ (triamcinolone hexacetonide); inhibitors of biosynthesis and action of adrenocortical steroids such as CYTADREN™ (aminoglutethimide), NIZORAL™ (ketoconazole), MODRASTANE™ (trilostane), and METOPIRONE™ (metyrapone); bovine, porcine or human insulin or mixtures thereof; insulin analogs; recombinant human insulin such as HUMULIN™ and NOVOLIN™; oral hypoglycemic agents such as ORAMIDE™ and ORINASE™ (tolbutamide), DIABINESE™ (chlorpropamide), TOLAMIDE™ and TOLINASE™ (tolazamide), DYMELOR™ (acetohexamide), glibenclamide, MICRONASE™, DIBETA™ and GLYNASE™ (glyburide), GLUCOTROL™ (glipizide), and DIAMICRON™ (gliclazide), GLUCOPHAGE™ (metformin), ciglitazone, pioglitazone, and alpha-glucosidase inhibitors; bovine or porcine glucagon; somatostatins such as SANDOSTATIN™ (octreotide); and diazoxides such as PROGLYCEM™ (diazoxide).

[0970] In one embodiment, the Therapeutics of the invention are administered in combination with treatments for uterine motility disorders. Treatments for uterine motility disorders include, but are not limited to, estrogen drugs such as conjugated estrogens (e.g., PREMARIN® and ESTRATAB®), estradiols (e.g., CLIMARA® and ALORA®),

estropipate, and chlorotrianisene; progestin drugs (e.g., AMEN® (medroxyprogesterone), MICRONOR® (norethidrone acetate), PROMETRIUM® progesterone, and megestrol acetate); and estrogen/progesterone combination therapies such as, for example, conjugated estrogens/medroxyprogesterone (e.g., PREMPRO™ and PREMPHASE®) and norethindrone acetate/ethinyl estsradiol (e.g., FEMHRT™).

[0971] In an additional embodiment, the Therapeutics of the invention are administered in combination with drugs effective in treating iron deficiency and hypochromic anemias, including but not limited to, ferrous sulfate (iron sulfate, FEOSOL™), ferrous fumarate (e.g., FEOSTAT™), ferrous gluconate (e.g., FERGON™), polysaccharide-iron complex (e.g., NIFEREX™), iron dextran injection (e.g., INFED™), cupric sulfate, pyroxidine, riboflavin, Vitamin B_{12}, cyancobalamin injection (e.g., REDISOL™, RUBRAMIN PC™), hydroxocobalamin, folic acid (e.g., FOLVITE™), leucovorin (folinic acid, 5-CHOH4PteGlu, citrovorum factor) or WELLCOVORIN (Calcium salt of leucovorin), transferrin or ferritin.

[0972] In certain embodiments, the Therapeutics of the invention are administered in combination with agents used to treat psychiatric disorders. Psychiatric drugs that may be administered with the Therapeutics of the invention include, but are not limited to, antipsychotic agents (e.g., chlorpromazine, chlorprothixene, clozapine, fluphenazine, haloperidol, loxapine, mesoridazine, molindone, olanzapine, perphenazine, pimozide, quetiapine, risperidone, thioridazine, thiothixene, trifluoperazine, and triflupromazine), antimanic agents (e.g., carbamazepine, divalproex sodium, lithium carbonate, and lithium citrate), antidepressants (e.g., amitriptyline, amoxapine, bupropion, citalopram, clomipramine, desipramine, doxepin, fluvoxamine, fluoxetine, imipramine, isocarboxazid, maprotiline, mirtazapine, nefazodone, nortriptyline, paroxetine, phenelzine, protriptyline, sertraline, tranylcypromine, trazodone, trimipramine, and venlafaxine), antianxiety agents (e.g., alprazolam, buspirone, chlordiazepoxide, clorazepate, diazepam, halazepam, lorazepam, oxazepam, and prazepam), and stimulants (e.g., d-amphetamine, methylphenidate, and pemoline).

[0973] In other embodiments, the Therapeutics of the invention are administered in combination with agents used to treat neurological disorders. Neurological agents that may be administered with the Therapeutics of the invention include, but are not limited to,

antiepileptic agents (e.g., carbamazepine, clonazepam, ethosuximide, phenobarbital, phenytoin, primidone, valproic acid, divalproex sodium, felbamate, gabapentin, lamotrigine, levetiracetam, oxcarbazepine, tiagabine, topiramate, zonisamide, diazepam, lorazepam, and clonazepam), antiparkinsonian agents (e.g., levodopa/carbidopa, selegiline, amantidine, bromocriptine, pergolide, ropinirole, pramipexole, benztropine; biperiden; ethopropazine; procyclidine; trihexyphenidyl, tolcapone), and ALS therapeutics (e.g. riluzole).

[0974] In another embodiment, Therapeutics of the invention are administered in combination with vasodilating agents and/or calcium channel blocking agents. Vasodilating agents that may be administered with the Therapeutics of the invention include, but are not limited to, Angiotensin Converting Enzyme (ACE) inhibitors (e.g., papaverine, isoxsuprine, benazepril, captopril, cilazapril, enalapril, enalaprilat, fosinopril, lisinopril, moexipril, perindopril, quinapril, ramipril, spirapril, trandolapril, and nylidrin), and nitrates (e.g., isosorbide dinitrate, isosorbide mononitrate, and nitroglycerin). Examples of calcium channel blocking agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to amlodipine, bepridil, diltiazem, felodipine, flunarizine, isradipine, nicardipine, nifedipine, nimodipine, and verapamil.

[0975] In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

Example 14: Method of Treating Decreased Levels of the Polypeptide

[0976] The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an agonist of the invention (including polypeptides of the invention). Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a polypeptide of the present invention in an individual can be treated by administering the agonist or antagonist of the present invention. Thus, the

invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist or antagonist to increase the activity level of the polypeptide in such an individual.

[0977] For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist or antagonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

Example 15: Method of Treating Increased Levels of the Polypeptide

[0978] The present invention also relates to a method of treating an individual in need of a decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

[0979] In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

[0980] For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The formulation of the antisense polynucleotide is provided in Example 13.

Example 16: Method of Treatment Using Gene Therapy-Ex Vivo

[0981] One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and

separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for approximately one week.

[0982] At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

[0983] pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

[0984] The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1 using primers and having appropriate restriction sites and initiation/stop codons, if necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

[0985] The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

[0986] Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently infected, the fibroblasts are analyzed to determine whether protein is produced.

[0987] The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

Example 17: Gene Therapy Using Endogenous Genes Corresponding To Polynucleotides of the Invention

[0988] Another method of gene therapy according to the present invention involves operably associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA, 86:8932-8935 (1989); and Zijlstra et al., Nature, 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

[0989] Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous polynucleotide sequence, flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The

promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

[0990] The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel, then purified by phenol extraction and ethanol precipitation.

[0991] In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

[0992] Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be detected by immunological staining, or any other method known in the art.

[0993] Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase fibroblasts are trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl, 5 mM KCl, 0.7 mM $Na_2 HPO_4$, 6 mM dextrose). The cells are recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin. The final cell suspension contains approximately $3X10^6$ cells/ml. Electroporation should be performed immediately following resuspension.

[0994] Plasmid DNA is prepared according to standard techniques. For example, to construct a plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3' end. Two non-coding sequences are amplified via PCR: one non-coding sequence (fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3'end; the other non-coding sequence (fragment 2) is amplified with a BamHI site at the 5'end and a HindIII site at the 3'end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

[0995] Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The final DNA concentration is generally at least 120 μg/ml. 0.5 ml of the cell suspension (containing approximately $1.5.X10^6$ cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 μF and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

[0996] Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a 10 cm dish and incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

[0997] The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

Example 18: Method of Treatment Using Gene Therapy - In Vivo

[0998] Another aspect of the present invention is using *in vivo* gene therapy methods to treat disorders, diseases and conditions. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to (i.e., associated with) a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., Cardiovasc. Res. 35(3):470-479 (1997); Chao et al., Pharmacol. Res. 35(6):517-522 (1997); Wolff, Neuromuscul. Disord. 7(5):314-318 (1997); Schwartz et al., Gene Ther. 3(5):405-411 (1996); Tsurumi et al., Circulation 94(12):3281-3290 (1996) (incorporated herein by reference).

[0999] The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

[1000] The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) Ann. NY Acad. Sci. 772:126-139 and Abdallah B. et al. (1995) Biol. Cell 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

[1001] The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the

transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

[1002] The polynucleotide construct can be delivered to the interstitial space of tissues within an animal, including muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

[1003] For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked polynucleotide constructs can be delivered to arteries during angioplasty by the catheter

used in the procedure.

[1004] The dose response effects of injected polynucleotide in muscle *in vivo* is determined as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology. The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

[1005] Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

[1006] After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15 um cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be used to extrapolate proper dosages and other treatment parameters in humans and other animals using naked DNA.

Example 19: Transgenic Animals

[1007] The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, *e.g.*, baboons, monkeys, and chimpanzees may be used to generate transgenic animals. In a

specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans, as part of a gene therapy protocol.

[1008] Any technique known in the art may be used to introduce the transgene (i.e., polynucleotides of the invention) into animals to produce the founder lines of transgenic animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989)); electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention using a gene gun (see, e.g., Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pleuripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, see Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

[1009] Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

[1010] The present invention provides for transgenic animals that carry the transgene in all their cells, as well as animals which carry the transgene in some, but not all their cells, *i.e.,* mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, *e.g.,* head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous

gene, gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of the endogenous gene. The transgene may also be selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

[1011] Once transgenic animals have been generated, the expression of the recombinant gene may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

[1012] Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

[1013] Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 20: Knock-Out Animals

[1014] Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (See e.g., Smithies et al., Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987); Thompson et al., Cell 5:313-321 (1989); each of which is incorporated by reference herein in its entirety.) For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (e.g., see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

[1015] In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not

limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

[1016] Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

[1017] When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

[1018] Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 21: Assays Detecting Stimulation or Inhibition of B cell Proliferation and Differentiation

[1019] Generation of functional humoral immune responses requires both soluble and cognate signaling between B-lineage cells and their microenvironment. Signals may impart a positive stimulus that allows a B-lineage cell to continue its programmed development, or a negative stimulus that instructs the cell to arrest its current developmental pathway. To date, numerous stimulatory and inhibitory signals have been found to influence B cell responsiveness including IL-2, IL-4, IL-5, IL-6, IL-7, IL10, IL-13, IL-14 and IL-15. Interestingly, these signals are by themselves weak effectors but can, in combination with various co-stimulatory proteins, induce activation, proliferation, differentiation, homing, tolerance and death among B cell populations.

[1020] One of the best studied classes of B-cell co-stimulatory proteins is the TNF-superfamily. Within this family CD40, CD27, and CD30 along with their respective ligands CD154, CD70, and CD153 have been found to regulate a variety of immune responses. Assays which allow for the detection and/or observation of the proliferation and differentiation of these B-cell populations and their precursors are valuable tools in determining the effects various proteins may have on these B-cell populations in terms of proliferation and differentiation. Listed below are two assays designed to allow for the detection of the differentiation, proliferation, or inhibition of B-cell populations and their precursors.

[1021] *In vitro* Assay- Agonists or antagonists of the invention can be assessed for its ability to induce activation, proliferation, differentiation or inhibition and/or death in B-cell populations and their precursors. The activity of the agonists or antagonists of the invention on purified human tonsillar B cells, measured qualitatively over the dose range from 0.1 to 10,000 ng/mL, is assessed in a standard B-lymphocyte co-stimulation assay in which purified tonsillar B cells are cultured in the presence of either formalin-fixed *Staphylococcus aureus* Cowan I (SAC) or immobilized anti-human IgM antibody as the priming agent. Second signals such as IL-2 and IL-15 synergize with SAC and IgM crosslinking to elicit B cell proliferation as measured by tritiated-thymidine incorporation. Novel synergizing agents can be readily identified using this assay. The assay involves

isolating human tonsillar B cells by magnetic bead (MACS) depletion of CD3-positive cells. The resulting cell population is greater than 95% B cells as assessed by expression of CD45R(B220).

[1022] Various dilutions of each sample are placed into individual wells of a 96-well plate to which are added 10^5 B-cells suspended in culture medium (RPMI 1640 containing 10% FBS, 5 X 10^{-5}M 2ME, 100U/ml penicillin, 10ug/ml streptomycin, and 10^{-5} dilution of SAC) in a total volume of 150ul. Proliferation or inhibition is quantitated by a 20h pulse (1uCi/well) with 3H-thymidine (6.7 Ci/mM) beginning 72h post factor addition. The positive and negative controls are IL2 and medium respectively.

[1023] *In Vivo* Assay- BALB/c mice are injected (i.p.) twice per day with buffer only, or 2 mg/Kg of agonists or antagonists of the invention, or truncated forms thereof. Mice receive this treatment for 4 consecutive days, at which time they are sacrificed and various tissues and serum collected for analyses. Comparison of H&E sections from normal spleens and spleens treated with agonists or antagonists of the invention identify the results of the activity of the agonists or antagonists on spleen cells, such as the diffusion of peri-arterial lymphatic sheaths, and/or significant increases in the nucleated cellularity of the red pulp regions, which may indicate the activation of the differentiation and proliferation of B-cell populations. Immunohistochemical studies using a B cell marker, anti-CD45R(B220), are used to determine whether any physiological changes to splenic cells, such as splenic disorganization, are due to increased B-cell representation within loosely defined B-cell zones that infiltrate established T-cell regions.

[1024] Flow cytometric analyses of the spleens from mice treated with agonist or antagonist is used to indicate whether the agonists or antagonists specifically increases the proportion of ThB+, CD45R(B220)dull B cells over that which is observed in control mice.

[1025] Likewise, a predicted consequence of increased mature B-cell representation *in vivo* is a relative increase in serum Ig titers. Accordingly, serum IgM and IgA levels are compared between buffer and agonists or antagonists-treated mice.

[1026] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the

exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 22: T Cell Proliferation Assay

[1027] A CD3-induced proliferation assay is performed on PBMCs and is measured by the uptake of ^{3}H-thymidine. The assay is performed as follows. Ninety-six well plates are coated with 100 µl/well of mAb to CD3 (HIT3a, Pharmingen) or isotype-matched control mAb (B33.1) overnight at 4 degrees C (1 µg/ml in .05M bicarbonate buffer, pH 9.5), then washed three times with PBS. PBMC are isolated by F/H gradient centrifugation from human peripheral blood and added to quadruplicate wells (5 x 10^{4}/well) of mAb coated plates in RPMI containing 10% FCS and P/S in the presence of varying concentrations of agonists or antagonists of the invention (total volume 200 ul). Relevant protein buffer and medium alone are controls. After 48 hr. culture at 37 degrees C, plates are spun for 2 min. at 1000 rpm and 100 µl of supernatant is removed and stored –20 degrees C for measurement of IL-2 (or other cytokines) if effect on proliferation is observed. Wells are supplemented with 100 ul of medium containing 0.5 uCi of ^{3}H-thymidine and cultured at 37 degrees C for 18-24 hr. Wells are harvested and incorporation of ^{3}H-thymidine used as a measure of proliferation. Anti-CD3 alone is the positive control for proliferation. IL-2 (100 U/ml) is also used as a control which enhances proliferation. Control antibody which does not induce proliferation of T cells is used as the negative control for the effects of agonists or antagonists of the invention.

[1028] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 23: Effect of Agonists or Antagonists of the Invention on the Expression of MHC Class II, Costimulatory and Adhesion Molecules and

Cell Differentiation of Monocytes and Monocyte-Derived Human Dendritic Cells

[1029] Dendritic cells are generated by the expansion of proliferating precursors found in the peripheral blood: adherent PBMC or elutriated monocytic fractions are cultured for 7-10 days with GM-CSF (50 ng/ml) and IL-4 (20 ng/ml). These dendritic cells have the characteristic phenotype of immature cells (expression of CD1, CD80, CD86, CD40 and MHC class II antigens). Treatment with activating factors, such as TNF-α, causes a rapid change in surface phenotype (increased expression of MHC class I and II, costimulatory and adhesion molecules, downregulation of FCγRII, upregulation of CD83). These changes correlate with increased antigen-presenting capacity and with functional maturation of the dendritic cells.

[1030] FACS analysis of surface antigens is performed as follows. Cells are treated 1-3 days with increasing concentrations of agonist or antagonist of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

[1031] Effect on the production of cytokines. Cytokines generated by dendritic cells, in particular IL-12, are important in the initiation of T-cell dependent immune responses. IL-12 strongly influences the development of Thl helper T-cell immune response, and induces cytotoxic T and NK cell function. An ELISA is used to measure the IL-12 release as follows. Dendritic cells (10^6/ml) are treated with increasing concentrations of agonists or antagonists of the invention for 24 hours. LPS (100 ng/ml) is added to the cell culture as positive control. Supernatants from the cell cultures are then collected and analyzed for IL-12 content using commercial ELISA kit (e.g., R & D Systems (Minneapolis, MN)). The standard protocols provided with the kits are used.

[1032] Effect on the expression of MHC Class II, costimulatory and adhesion molecules. Three major families of cell surface antigens can be identified on monocytes:

adhesion molecules, molecules involved in antigen presentation, and Fc receptor. Modulation of the expression of MHC class II antigens and other costimulatory molecules, such as B7 and ICAM-1, may result in changes in the antigen presenting capacity of monocytes and ability to induce T cell activation. Increased expression of Fc receptors may correlate with improved monocyte cytotoxic activity, cytokine release and phagocytosis.

[1033] FACS analysis is used to examine the surface antigens as follows. Monocytes are treated 1-5 days with increasing concentrations of agonists or antagonists of the invention or LPS (positive control), washed with PBS containing 1% BSA and 0.02 mM sodium azide, and then incubated with 1:20 dilution of appropriate FITC- or PE-labeled monoclonal antibodies for 30 minutes at 4 degrees C. After an additional wash, the labeled cells are analyzed by flow cytometry on a FACScan (Becton Dickinson).

[1034] Monocyte activation and/or increased survival. Assays for molecules that activate (or alternatively, inactivate) monocytes and/or increase monocyte survival (or alternatively, decrease monocyte survival) are known in the art and may routinely be applied to determine whether a molecule of the invention functions as an inhibitor or activator of monocytes. Agonists or antagonists of the invention can be screened using the three assays described below. For each of these assays, Peripheral blood mononuclear cells (PBMC) are purified from single donor leukopacks (American Red Cross, Baltimore, MD) by centrifugation through a Histopaque gradient (Sigma). Monocytes are isolated from PBMC by counterflow centrifugal elutriation.

[1035] Monocyte Survival Assay. Human peripheral blood monocytes progressively lose viability when cultured in absence of serum or other stimuli. Their death results from internally regulated processes (apoptosis). Addition to the culture of activating factors, such as TNF-alpha dramatically improves cell survival and prevents DNA fragmentation. Propidium iodide (PI) staining is used to measure apoptosis as follows. Monocytes are cultured for 48 hours in polypropylene tubes in serum-free medium (positive control), in the presence of 100 ng/ml TNF-alpha (negative control), and in the presence of varying concentrations of the compound to be tested. Cells are

suspended at a concentration of 2 x 10^6/ml in PBS containing PI at a final concentration of 5 μg/ml, and then incubated at room temperature for 5 minutes before FACScan analysis. PI uptake has been demonstrated to correlate with DNA fragmentation in this experimental paradigm.

[1036] Effect on cytokine release. An important function of monocytes/macrophages is their regulatory activity on other cellular populations of the immune system through the release of cytokines after stimulation. An ELISA to measure cytokine release is performed as follows. Human monocytes are incubated at a density of $5x10^5$ cells/ml with increasing concentrations of agonists or antagonists of the invention and under the same conditions, but in the absence of agonists or antagonists. For IL-12 production, the cells are primed overnight with IFN (100 U/ml) in the presence of agonist or antagonist of the invention. LPS (10 ng/ml) is then added. Conditioned media are collected after 24h and kept frozen until use. Measurement of TNF-alpha, IL-10, MCP-1 and IL-8 is then performed using a commercially available ELISA kit (e.g., R & D Systems (Minneapolis, MN)) and applying the standard protocols provided with the kit.

[1037] Oxidative burst. Purified monocytes are plated in 96-w plate at 2-$1x10^5$ cell/well. Increasing concentrations of agonists or antagonists of the invention are added to the wells in a total volume of 0.2 ml culture medium (RPMI 1640 + 10% FCS, glutamine and antibiotics). After 3 days incubation, the plates are centrifuged and the medium is removed from the wells. To the macrophage monolayers, 0.2 ml per well of phenol red solution (140 mM NaCl, 10 mM potassium phosphate buffer pH 7.0, 5.5 mM dextrose, 0.56 mM phenol red and 19 U/ml of HRPO) is added, together with the stimulant (200 nM PMA). The plates are incubated at 37°C for 2 hours and the reaction is stopped by adding 20 μl 1N NaOH per well. The absorbance is read at 610 nm. To calculate the amount of H_2O_2 produced by the macrophages, a standard curve of a H_2O_2 solution of known molarity is performed for each experiment.

[1038] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the

exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 24: Biological Effects of Agonists or Antagonists of the Invention

Astrocyte and Neuronal Assays.

[1039] Agonists or antagonists of the invention, expressed in *Escherichia coli* and purified as described above, can be tested for activity in promoting the survival, neurite outgrowth, or phenotypic differentiation of cortical neuronal cells and for inducing the proliferation of glial fibrillary acidic protein immunopositive cells, astrocytes. The selection of cortical cells for the bioassay is based on the prevalent expression of FGF-1 and FGF-2 in cortical structures and on the previously reported enhancement of cortical neuronal survival resulting from FGF-2 treatment. A thymidine incorporation assay, for example, can be used to elucidate an agonist or antagonist of the invention's activity on these cells.

[1040] Moreover, previous reports describing the biological effects of FGF-2 (basic FGF) on cortical or hippocampal neurons *in vitro* have demonstrated increases in both neuron survival and neurite outgrowth (Walicke et al., "Fibroblast growth factor promotes survival of dissociated hippocampal neurons and enhances neurite extension." Proc. Natl. Acad. Sci. USA 83:3012-3016. (1986), assay herein incorporated by reference in its entirety). However, reports from experiments done on PC-12 cells suggest that these two responses are not necessarily synonymous and may depend on not only which FGF is being tested but also on which receptor(s) are expressed on the target cells. Using the primary cortical neuronal culture paradigm, the ability of an agonist or antagonist of the invention to induce neurite outgrowth can be compared to the response achieved with FGF-2 using, for example, a thymidine incorporation assay.

Fibroblast and endothelial cell assays.

[1041] Human lung fibroblasts are obtained from Clonetics (San Diego, CA) and maintained in growth media from Clonetics. Dermal microvascular endothelial cells are obtained from Cell Applications (San Diego, CA). For proliferation assays, the human lung fibroblasts and dermal microvascular endothelial cells can be cultured at 5,000 cells/well in a 96-well plate for one day in growth medium. The cells are then incubated for one day in 0.1% BSA basal medium. After replacing the medium with fresh 0.1% BSA medium, the cells are incubated with the test proteins for 3 days. Alamar Blue (Alamar Biosciences, Sacramento, CA) is added to each well to a final concentration of 10%. The cells are incubated for 4 hr. Cell viability is measured by reading in a CytoFluor fluorescence reader. For the PGE_2 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or agonists or antagonists of the invention with or without IL-1α for 24 hours. The supernatants are collected and assayed for PGE_2 by EIA kit (Cayman, Ann Arbor, MI). For the IL-6 assays, the human lung fibroblasts are cultured at 5,000 cells/well in a 96-well plate for one day. After a medium change to 0.1% BSA basal medium, the cells are incubated with FGF-2 or with or without agonists or antagonists of the invention IL-1α for 24 hours. The supernatants are collected and assayed for IL-6 by ELISA kit (Endogen, Cambridge, MA).

[1042] Human lung fibroblasts are cultured with FGF-2 or agonists or antagonists of the invention for 3 days in basal medium before the addition of Alamar Blue to assess effects on growth of the fibroblasts. FGF-2 should show a stimulation at 10 - 2500 ng/ml which can be used to compare stimulation with agonists or antagonists of the invention.

Parkinson Models.

[1043] The loss of motor function in Parkinson's disease is attributed to a deficiency of striatal dopamine resulting from the degeneration of the nigrostriatal dopaminergic projection neurons. An animal model for Parkinson's that has been extensively characterized involves the systemic administration of 1-methyl-4 phenyl 1,2,3,6-tetrahydropyridine (MPTP). In the CNS, MPTP is taken-up by astrocytes and catabolized by monoamine oxidase B to 1-methyl-4-phenyl pyridine (MPP^+) and released. Subsequently, MPP^+ is actively accumulated in

dopaminergic neurons by the high-affinity reuptake transporter for dopamine. MPP^+ is then concentrated in mitochondria by the electrochemical gradient and selectively inhibits nicotidamide adenine disphosphate: ubiquinone oxidoreductionase (complex I), thereby interfering with electron transport and eventually generating oxygen radicals.

[1044] It has been demonstrated in tissue culture paradigms that FGF-2 (basic FGF) has trophic activity towards nigral dopaminergic neurons (Ferrari et al., Dev. Biol. 1989). Recently, Dr. Unsicker's group has demonstrated that administering FGF-2 in gel foam implants in the striatum results in the near complete protection of nigral dopaminergic neurons from the toxicity associated with MPTP exposure (Otto and Unsicker, J. Neuroscience, 1990).

[1045] Based on the data with FGF-2, agonists or antagonists of the invention can be evaluated to determine whether it has an action similar to that of FGF-2 in enhancing dopaminergic neuronal survival *in vitro* and it can also be tested *in vivo* for protection of dopaminergic neurons in the striatum from the damage associated with MPTP treatment. The potential effect of an agonist or antagonist of the invention is first examined *in vitro* in a dopaminergic neuronal cell culture paradigm. The cultures are prepared by dissecting the midbrain floor plate from gestation day 14 Wistar rat embryos. The tissue is dissociated with trypsin and seeded at a density of 200,000 cells/cm^2 on polyorthinine-laminin coated glass coverslips. The cells are maintained in Dulbecco's Modified Eagle's medium and F12 medium containing hormonal supplements (N1). The cultures are fixed with paraformaldehyde after 8 days *in vitro* and are processed for tyrosine hydroxylase, a specific marker for dopaminergic neurons, immunohistochemical staining. Dissociated cell cultures are prepared from embryonic rats. The culture medium is changed every third day and the factors are also added at that time.

[1046] Since the dopaminergic neurons are isolated from animals at gestation day 14, a developmental time which is past the stage when the dopaminergic precursor cells are proliferating, an increase in the number of tyrosine hydroxylase immunopositive neurons would represent an increase in the number of dopaminergic neurons surviving *in vitro*. Therefore, if an agonist or antagonist of the invention acts to prolong the survival of dopaminergic neurons, it would suggest that the agonist or antagonist may be involved in Parkinson's Disease.

[1047] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 25: The Effect of Agonists or Antagonists of the Invention on the Growth of Vascular Endothelial Cells

[1048] On day 1, human umbilical vein endothelial cells (HUVEC) are seeded at 2-5x10^4 cells/35 mm dish density in M199 medium containing 4% fetal bovine serum (FBS), 16 units/ml heparin, and 50 units/ml endothelial cell growth supplements (ECGS, Biotechnique, Inc.). On day 2, the medium is replaced with M199 containing 10% FBS, 8 units/ml heparin. An agonist or antagonist of the invention, and positive controls, such as VEGF and basic FGF (bFGF) are added, at varying concentrations. On days 4 and 6, the medium is replaced. On day 8, cell number is determined with a Coulter Counter.

[1049] An increase in the number of HUVEC cells indicates that the compound of the invention may proliferate vascular endothelial cells, while a decrease in the number of HUVEC cells indicates that the compound of the invention inhibits vascular endothelial cells.

[1050] The studies described in this example tested activity of a polypeptide of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), agonists, and/or antagonists of the invention.

Example 26: Rat Corneal Wound Healing Model

[1051] This animal model shows the effect of an agonist or antagonist of the invention on neovascularization. The experimental protocol includes:

Making a 1-1.5 mm long incision from the center of cornea into the stromal layer.

Inserting a spatula below the lip of the incision facing the outer corner of the eye.

Making a pocket (its base is 1-1.5 mm form the edge of the eye).

Positioning a pellet, containing 50ng- 5ug of an agonist or antagonist of the invention, within the pocket.

Treatment with an agonist or antagonist of the invention can also be applied topically to the corneal wounds in a dosage range of 20mg - 500mg (daily treatment for five days).

[1052] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 27: Diabetic Mouse and Glucocorticoid-Impaired Wound Healing Models

Diabetic db+/db+ Mouse Model.

[1053] To demonstrate that an agonist or antagonist of the invention accelerates the healing process, the genetically diabetic mouse model of wound healing is used. The full thickness wound healing model in the db+/db+ mouse is a well characterized, clinically relevant and reproducible model of impaired wound healing. Healing of the diabetic wound is dependent on formation of granulation tissue and re-epithelialization rather than contraction (Gartner, M.H. et al., J. Surg. Res. 52:389 (1992); Greenhalgh, D.G. et al., Am. J. Pathol. 136:1235 (1990)).

[1054] The diabetic animals have many of the characteristic features observed in Type II diabetes mellitus. Homozygous (db+/db+) mice are obese in comparison to their normal heterozygous (db+/+m) littermates. Mutant diabetic (db+/db+) mice have a single autosomal recessive mutation on chromosome 4 (db+) (Coleman et al. Proc. Natl. Acad. Sci. USA 77:283-293 (1982)). Animals show polyphagia, polydipsia and polyuria. Mutant diabetic mice (db+/db+) have elevated blood glucose, increased or normal insulin levels, and suppressed cell-mediated immunity (Mandel et al., J. Immunol. 120:1375 (1978); Debray-Sachs, M. et al., Clin. Exp. Immunol. 51(1):1-7 (1983); Leiter et al., Am. J. of Pathol. 114:46-55 (1985)). Peripheral neuropathy, myocardial complications, and microvascular lesions, basement membrane thickening and glomerular filtration abnormalities have been described in these animals (Norido, F. et al., Exp. Neurol. 83(2):221-232 (1984); Robertson et al., Diabetes

29(1):60-67 (1980); Giacomelli et al., Lab Invest. 40(4):460-473 (1979); Coleman, D.L., Diabetes 31 (Suppl):1-6 (1982)). These homozygous diabetic mice develop hyperglycemia that is resistant to insulin analogous to human type II diabetes (Mandel et al., J. Immunol. 120:1375-1377 (1978)).

[1055] The characteristics observed in these animals suggests that healing in this model may be similar to the healing observed in human diabetes (Greenhalgh, et al., Am. J. of Pathol. 136:1235-1246 (1990)).

[1056] Genetically diabetic female C57BL/KsJ (db+/db+) mice and their non-diabetic (db+/+m) heterozygous littermates are used in this study (Jackson Laboratories). The animals are purchased at 6 weeks of age and are 8 weeks old at the beginning of the study. Animals are individually housed and received food and water ad libitum. All manipulations are performed using aseptic techniques. The experiments are conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

[1057] Wounding protocol is performed according to previously reported methods (Tsuboi, R. and Rifkin, D.B., J. Exp. Med. 172:245-251 (1990)). Briefly, on the day of wounding, animals are anesthetized with an intraperitoneal injection of Avertin (0.01 mg/mL), 2,2,2-tribromoethanol and 2-methyl-2-butanol dissolved in deionized water. The dorsal region of the animal is shaved and the skin washed with 70% ethanol solution and iodine. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is then created using a Keyes tissue punch. Immediately following wounding, the surrounding skin is gently stretched to eliminate wound expansion. The wounds are left open for the duration of the experiment. Application of the treatment is given topically for 5 consecutive days commencing on the day of wounding. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

[1058] Wounds are visually examined and photographed at a fixed distance at the day of surgery and at two day intervals thereafter. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

[1059] An agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

[1060] Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology and immunohistochemistry. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

[1061] Three groups of 10 animals each (5 diabetic and 5 non-diabetic controls) are evaluated: 1) Vehicle placebo control, 2) untreated group, and 3) treated group.

[1062] Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total square area of the wound. Contraction is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

[1063] Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using a Reichert-Jung microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds are used to assess whether the healing process and the morphologic appearance of the repaired skin is altered by treatment with an agonist or antagonist of the invention. This assessment included verification of the presence of cell accumulation, inflammatory cells, capillaries, fibroblasts, re-epithelialization and epidermal maturity (Greenhalgh, D.G. *et al., Am. J. Pathol. 136:*1235 (1990)). A calibrated lens micrometer is used by a blinded observer.

[1064] Tissue sections are also stained immunohistochemically with a polyclonal rabbit anti-human keratin antibody using ABC Elite detection system. Human skin is used as a positive tissue control while non-immune IgG is used as a negative control. Keratinocyte growth is determined by evaluating the extent of reepithelialization of the wound using a calibrated lens micrometer.

[1065] Proliferating cell nuclear antigen/cyclin (PCNA) in skin specimens is demonstrated by using anti-PCNA antibody (1:50) with an ABC Elite detection system. Human colon cancer served as a positive tissue control and human brain tissue is used as a negative tissue control. Each specimen included a section with omission of the primary antibody and substitution with non-immune mouse IgG. Ranking of these sections is based on the extent of proliferation on a scale of 0-8, the lower side of the scale reflecting slight proliferation to the higher side reflecting intense proliferation.

[1066] Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

Steroid Impaired Rat Model

[1067] The inhibition of wound healing by steroids has been well documented in various *in vitro* and *in vivo* systems (Wahl, Glucocorticoids and Wound healing. In: Anti-Inflammatory Steroid Action: Basic and Clinical Aspects. 280-302 (1989); Wahl et al., J. Immunol. 115: 476-481 (1975); Werb et al., J. Exp. Med. 147:1684-1694 (1978)). Glucocorticoids retard wound healing by inhibiting angiogenesis, decreasing vascular permeability (Ebert et al., An. Intern. Med. 37:701-705 (1952)), fibroblast proliferation, and collagen synthesis (Beck et al., Growth Factors. 5: 295-304 (1991); Haynes et al., J. Clin. Invest. 61: 703-797 (1978)) and producing a transient reduction of circulating monocytes (Haynes et al., J. Clin. Invest. 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989)). The systemic administration of steroids to impaired wound healing is a well establish phenomenon in rats (Beck et al., Growth Factors. 5: 295-304 (1991); Haynes et al., J. Clin. Invest. 61: 703-797 (1978); Wahl, "Glucocorticoids and wound healing", In: Antiinflammatory Steroid Action: Basic and Clinical Aspects, Academic Press, New York, pp. 280-302 (1989); Pierce et al., Proc. Natl. Acad. Sci. USA 86: 2229-2233 (1989)).

[1068] To demonstrate that an agonist or antagonist of the invention can accelerate the healing process, the effects of multiple topical applications of the agonist or antagonist on full thickness excisional skin wounds in rats in which healing has been impaired by the systemic administration of methylprednisolone is assessed.

[1069] Young adult male Sprague Dawley rats weighing 250-300 g (Charles River Laboratories) are used in this example. The animals are purchased at 8 weeks of age and are 9 weeks old at the beginning of the study. The healing response of rats is impaired by the systemic administration of methylprednisolone (17mg/kg/rat intramuscularly) at the time of wounding. Animals are individually housed and received food and water *ad libitum*. All manipulations are performed using aseptic techniques. This study is conducted according to the rules and guidelines of Human Genome Sciences, Inc. Institutional Animal Care and Use Committee and the Guidelines for the Care and Use of Laboratory Animals.

[1070] The wounding protocol is followed according to section A, above. On the day of wounding, animals are anesthetized with an intramuscular injection of ketamine (50 mg/kg) and xylazine (5 mg/kg). The dorsal region of the animal is shaved and the skin washed with 70% ethanol and iodine solutions. The surgical area is dried with sterile gauze prior to wounding. An 8 mm full-thickness wound is created using a Keyes tissue punch. The wounds are left open for the duration of the experiment. Applications of the testing materials are given topically once a day for 7 consecutive days commencing on the day of wounding and subsequent to methylprednisolone administration. Prior to treatment, wounds are gently cleansed with sterile saline and gauze sponges.

[1071] Wounds are visually examined and photographed at a fixed distance at the day of wounding and at the end of treatment. Wound closure is determined by daily measurement on days 1-5 and on day 8. Wounds are measured horizontally and vertically using a calibrated Jameson caliper. Wounds are considered healed if granulation tissue is no longer visible and the wound is covered by a continuous epithelium.

[1072] The agonist or antagonist of the invention is administered using at a range different doses, from 4mg to 500mg per wound per day for 8 days in vehicle. Vehicle control groups received 50mL of vehicle solution.

[1073] Animals are euthanized on day 8 with an intraperitoneal injection of sodium pentobarbital (300mg/kg). The wounds and surrounding skin are then harvested for histology. Tissue specimens are placed in 10% neutral buffered formalin in tissue cassettes between biopsy sponges for further processing.

[1074] Three groups of 10 animals each (5 with methylprednisolone and 5 without glucocorticoid) are evaluated: 1) Untreated group 2) Vehicle placebo control 3) treated groups.

[1075] Wound closure is analyzed by measuring the area in the vertical and horizontal axis and obtaining the total area of the wound. Closure is then estimated by establishing the differences between the initial wound area (day 0) and that of post treatment (day 8). The wound area on day 1 is $64mm^2$, the corresponding size of the dermal punch. Calculations are made using the following formula:

[Open area on day 8] - [Open area on day 1] / [Open area on day 1]

[1076] Specimens are fixed in 10% buffered formalin and paraffin embedded blocks are sectioned perpendicular to the wound surface (5mm) and cut using an Olympus microtome. Routine hematoxylin-eosin (H&E) staining is performed on cross-sections of bisected wounds. Histologic examination of the wounds allows assessment of whether the healing process and the morphologic appearance of the repaired skin is improved by treatment with an agonist or antagonist of the invention. A calibrated lens micrometer is used by a blinded observer to determine the distance of the wound gap.

[1077] Experimental data are analyzed using an unpaired t test. A p value of < 0.05 is considered significant.

[1078] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 28: Lymphadema Animal Model

[1079] The purpose of this experimental approach is to create an appropriate and consistent lymphedema model for testing the therapeutic effects of an agonist or antagonist of the invention in lymphangiogenesis and re-establishment of the lymphatic circulatory system in the rat hind limb. Effectiveness is measured by swelling volume of the affected limb, quantification of the amount of lymphatic vasculature, total blood plasma protein, and histopathology. Acute lymphedema is observed for 7-10 days. Perhaps more importantly, the chronic progress of the edema is followed for up to 3-4 weeks.

[1080] Prior to beginning surgery, blood sample is drawn for protein concentration analysis. Male rats weighing approximately ~350g are dosed with Pentobarbital. Subsequently, the right legs are shaved from knee to hip. The shaved area is swabbed with gauze soaked in 70% EtOH. Blood is drawn for serum total protein testing. Circumference and volumetric measurements are made prior to injecting dye into paws after marking 2 measurement levels (0.5 cm above heel, at mid-pt of dorsal paw). The intradermal dorsum of both right and left paws are injected with 0.05 ml of 1% Evan's Blue. Circumference and volumetric measurements are then made following injection of dye into paws.

[1081] Using the knee joint as a landmark, a mid-leg inguinal incision is made circumferentially allowing the femoral vessels to be located. Forceps and hemostats are used to dissect and separate the skin flaps. After locating the femoral vessels, the lymphatic vessel that runs along side and underneath the vessel(s) is located. The main lymphatic vessels in this area are then electrically coagulated or suture ligated.

[1082] Using a microscope, muscles in back of the leg (near the semitendinosis and adductors) are bluntly dissected. The popliteal lymph node is then located. The 2 proximal and 2 distal lymphatic vessels and distal blood supply of the popliteal node are then ligated by suturing. The popliteal lymph node, and any accompanying adipose tissue, is then removed by cutting connective tissues.

[1083] Care is taken to control any mild bleeding resulting from this procedure. After lymphatics are occluded, the skin flaps are sealed by using liquid skin (Vetbond) (AJ Buck). The separated skin edges are sealed to the underlying muscle tissue while leaving a gap of ~0.5 cm around the leg. Skin also may be anchored by suturing to underlying muscle when necessary.

[1084] To avoid infection, animals are housed individually with mesh (no bedding). Recovering animals are checked daily through the optimal edematous peak, which typically occurred by day 5-7. The plateau edematous peak are then observed. To evaluate the intensity of the lymphedema, the circumference and volumes of 2 designated places on each paw before operation and daily for 7 days are measured. The effect of plasma proteins on lymphedema is determined and whether protein analysis is a useful testing perimeter is also investigated. The weights of both control and edematous limbs are evaluated at 2 places. Analysis is performed in a blind manner.

[1085] Circumference Measurements: Under brief gas anesthetic to prevent limb movement, a cloth tape is used to measure limb circumference. Measurements are done at the ankle bone and dorsal paw by 2 different people and those 2 readings are averaged. Readings are taken from both control and edematous limbs.

[1086] Volumetric Measurements: On the day of surgery, animals are anesthetized with Pentobarbital and are tested prior to surgery. For daily volumetrics animals are under brief halothane anesthetic (rapid immobilization and quick recovery), and both legs are shaved and equally marked using waterproof marker on legs. Legs are first dipped in water, then dipped into instrument to each marked level, then measured by Buxco edema software(Chen/Victor). Data is recorded by one person, while the other is dipping the limb to marked area.

[1087] Blood-plasma protein measurements: Blood is drawn, spun, and serum separated prior to surgery and then at conclusion for total protein and $Ca2^{+}$ comparison.

[1088] Limb Weight Comparison: After drawing blood, the animal is prepared for tissue collection. The limbs are amputated using a quillitine, then both experimental and control legs are cut at the ligature and weighed. A second weighing is done as the tibio-cacaneal joint is disarticulated and the foot is weighed.

[1089] Histological Preparations: The transverse muscle located behind the knee (popliteal) area is dissected and arranged in a metal mold, filled with freezeGel, dipped into cold methylbutane, placed into labeled sample bags at - 80EC until sectioning. Upon sectioning, the muscle is observed under fluorescent microscopy for lymphatics..

[1090] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 29: Suppression of TNF alpha-induced adhesion molecule expression by a Agonist or Antagonist of the Invention

[1091] The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs)

on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

[1092] Tumor necrosis factor alpha (TNF-a), a potent proinflammatory cytokine, is a stimulator of all three CAMs on endothelial cells and may be involved in a wide variety of inflammatory responses, often resulting in a pathological outcome.

[1093] The potential of an agonist or antagonist of the invention to mediate a suppression of TNF-a induced CAM expression can be examined. A modified ELISA assay which uses ECs as a solid phase absorbent is employed to measure the amount of CAM expression on TNF-a treated ECs when co-stimulated with a member of the FGF family of proteins.

[1094] To perform the experiment, human umbilical vein endothelial cell (HUVEC) cultures are obtained from pooled cord harvests and maintained in growth medium (EGM-2; Clonetics, San Diego, CA) supplemented with 10% FCS and 1% penicillin/streptomycin in a 37 degree C humidified incubator containing 5% CO_2. HUVECs are seeded in 96-well plates at concentrations of 1 x 10^4 cells/well in EGM medium at 37 degree C for 18-24 hrs or until confluent. The monolayers are subsequently washed 3 times with a serum-free solution of RPMI-1640 supplemented with 100 U/ml penicillin and 100 mg/ml streptomycin, and treated with a given cytokine and/or growth factor(s) for 24 h at 37 degree C. Following incubation, the cells are then evaluated for CAM expression.

[1095] Human Umbilical Vein Endothelial cells (HUVECs) are grown in a standard 96 well plate to confluence. Growth medium is removed from the cells and replaced with 90 ul of 199 Medium (10% FBS). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 ul volumes). Plates are incubated at 37 degree C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to

remove medium and 100 µl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min.

[1096] Fixative is then removed from the wells and wells are washed 1X with PBS(+Ca,Mg)+0.5% BSA and drained. Do not allow the wells to dry. Add 10 µl of diluted primary antibody to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 µg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA.

[1097] Then add 20 µl of diluted ExtrAvidin-Alkaline Phosphotase (1:5,000 dilution) to each well and incubated at 37°C for 30 min. Wells are washed X3 with PBS(+Ca,Mg)+0.5% BSA. 1 tablet of p-Nitrophenol Phosphate pNPP is dissolved in 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent must then be added to each of the standard wells. The plate must be incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The results are quantified on a plate reader at 405 nm. The background subtraction option is used on blank wells filled with glycine buffer only. The template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

[1098] The studies described in this example tested activity of agonists or antagonists of the invention. However, one skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides or polypeptides of the invention (e.g., gene therapy).

Example 30: Production Of Polypeptide of the Invention For High-Throughput Screening Assays

[1099] The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in Examples 32-41.

[1100] First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

[1101] Plate 293T cells (do not carry cells past P+20) at 2 x 10^5 cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

[1102] The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with each set of transfections.

[1103] Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First, person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate at 37 degree C for 6 hours.

[1104] While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl2 (anhyd); 0.00130 mg/L $CuSO_4$-$5H_2O$; 0.050 mg/L of $Fe(NO_3)_3$-$9H_2O$; 0.417 mg/L of $FeSO_4$-$7H_2O$; 311.80 mg/L of Kcl; 28.64 mg/L of $MgCl_2$; 48.84 mg/L of $MgSO_4$; 6995.50 mg/L of NaCl; 2400.0 mg/L of $NaHCO_3$; 62.50 mg/L of NaH_2PO_4-H_20; 71.02 mg/L of Na_2HPO4; .4320 mg/L of $ZnSO_4$-$7H_2O$; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitric Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose; 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H_20; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H_20; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H_20; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-Phenylalainine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tryrosine-2Na-$2H_20$; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B_{12}; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

[1105] The transfection reaction is terminated, preferably by tag-teaming, at the end of the incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

[1106] On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be used in the assays described in Examples 32-39.

[1107] It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

Example 31: Construction of GAS Reporter Construct

[1108] One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

[1109] GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

[1110] The STATs are activated to translocate from the cytoplasm to the nucleus upon tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks")

family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases display significant sequence similarity and are generally catalytically inactive in resting cells.

[1111] The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995).) A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xaa-Trp-Ser (SEQ ID NO:2)).

[1112] Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in the Jaks-STATs signal transduction pathway.

[1113] Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway. (See Table below.) Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

Ligand	JAKs tyk2	Jak1	Jak2	Jak3	STATS	GAS(elements) or ISRE
IFN family						
IFN-a/B	+	+	-	-	1,2,3	ISRE
IFN-g		+	+	-	1	GAS (IRF1>Lys6>IFP)
Il-10	+	?	?	-	1,3	
gp130 family						
IL-6 (Pleiotropic)	+	+	+	?	1,3	GAS (IRF1>Lys6>IFP)
Il-11(Pleiotropic)	?	+	?	?	1,3	
OnM(Pleiotropic)	?	+	+	?	1,3	
LIF(Pleiotropic)	?	+	+	?	1,3	
CNTF(Pleiotropic)	-/+	+	+	?	1,3	
G-CSF(Pleiotropic)	?	+	?	?	1,3	
IL-12(Pleiotropic)	+	-	+	+	1,3	
g-C family						
IL-2 (lymphocytes)	-	+	-	+	1,3,5	GAS
IL-4 (lymph/myeloid)	-	+	-	+	6	GAS (IRF1=IFP >>Ly6)(IgH)
IL-7 (lymphocytes)	-	+	-	+	5	GAS
IL-9 (lymphocytes)	-	+	-	+	5	GAS
IL-13 (lymphocyte)	-	+	?	?	6	GAS
IL-15	?	+	?	+	5	GAS
gp140 family						
IL-3 (myeloid)	-	-	+	-	5	GAS (IRF1>IFP>>Ly6)
IL-5 (myeloid)	-	-	+	-	5	GAS
GM-CSF (myeloid)	-	-	+	-	5	GAS
Growth hormone family						
GH	?	-	+	-	5	
PRL	?	+/-	+	-	1,3,5	
EPO	?	-	+	-	5	GAS(B-CAS>IRF1=IFP>>Ly6)
Receptor Tyrosine Kinases						
EGF	?	+	+	-	1,3	GAS (IRF1)
PDGF	?	+	+	-	1,3	
CSF-1	?	+	+	-	1,3	GAS (not IRF1)

[1114] To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 32-33, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCG
AAATGATTTCCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO: 3)

[1115] The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO: 4)

[1116] PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':CTCGAGATTTCCCCGAAATCTAGATTTCCCCGAAATGATTTCCCCGAAAT
GATTTCCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGC
CCCTAACTCCGCCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCC
GCCCCATGGCTGACTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTC
GGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGG
CTTTTGCAAAAAGCTT:3' (SEQ ID NO: 5)

[1117] With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be used instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

[1118] The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

[1119] Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 32-33.

[1120] Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing NFK-B and EGR promoter sequences are described in Examples 34 and 35. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, Il-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

Example 32: High-Throughput Screening Assay for T-cell Activity.

[1121] The following protocol is used to assess T-cell activity by identifying factors, and determining whether supernate containing a polypeptide of the invention proliferates and/or differentiates T-cells. T-cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 31. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The T-cell used in this assay is Jurkat T-cells (ATCC Accession No. TIB-152), although Molt-

3 cells (ATCC Accession No. CRL-1552) and Molt-4 cells (ATCC Accession No. CRL-1582) cells can also be used.

[1122] Jurkat T-cells are lymphoblastic CD4+ Th1 helper cells. In order to generate stable cell lines, approximately 2 million Jurkat cells are transfected with the GAS-SEAP/neo vector using DMRIE-C (Life Technologies)(transfection procedure described below). The transfected cells are seeded to a density of approximately 20,000 cells per well and transfectants resistant to 1 mg/ml genticin selected. Resistant colonies are expanded and then tested for their response to increasing concentrations of interferon gamma. The dose response of a selected clone is demonstrated.

[1123] Specifically, the following protocol will yield sufficient cells for 75 wells containing 200 ul of cells. Thus, it is either scaled up, or performed in multiple to generate sufficient cells for multiple 96 well plates. Jurkat cells are maintained in RPMI + 10% serum with 1%Pen-Strep. Combine 2.5 mls of OPTI-MEM (Life Technologies) with 10 ug of plasmid DNA in a T25 flask. Add 2.5 ml OPTI-MEM containing 50 ul of DMRIE-C and incubate at room temperature for 15-45 mins.

[1124] During the incubation period, count cell concentration, spin down the required number of cells (10^7 per transfection), and resuspend in OPTI-MEM to a final concentration of 10^7 cells/ml. Then add 1ml of 1 x 10^7 cells in OPTI-MEM to T25 flask and incubate at 37 degree C for 6 hrs. After the incubation, add 10 ml of RPMI + 15% serum.

[1125] The Jurkat:GAS-SEAP stable reporter lines are maintained in RPMI + 10% serum, 1 mg/ml Genticin, and 1% Pen-Strep. These cells are treated with supernatants containing polypeptide of the present invention or polypeptide of the present invention induced polypeptides as produced by the protocol described in Example 30.

[1126] On the day of treatment with the supernatant, the cells should be washed and resuspended in fresh RPMI + 10% serum to a density of 500,000 cells per ml. The exact number of cells required will depend on the number of supernatants being screened. For one 96 well plate, approximately 10 million cells (for 10 plates, 100 million cells) are required.

[1127] Transfer the cells to a triangular reservoir boat, in order to dispense the cells into a 96 well dish, using a 12 channel pipette. Using a 12 channel pipette, transfer 200 ul of cells into each well (therefore adding 100, 000 cells per well).

[1128] After all the plates have been seeded, 50 ul of the supernatants are transferred directly from the 96 well plate containing the supernatants into each well using a 12 channel pipette. In addition, a dose of exogenous interferon gamma (0.1, 1.0, 10 ng) is added to wells H9, H10, and H11 to serve as additional positive controls for the assay.

[1129] The 96 well dishes containing Jurkat cells treated with supernatants are placed in an incubator for 48 hrs (note: this time is variable between 48-72 hrs). 35 ul samples from each well are then transferred to an opaque 96 well plate using a 12 channel pipette. The opaque plates should be covered (using sellophene covers) and stored at -20 degree C until SEAP assays are performed according to Example 36. The plates containing the remaining treated cells are placed at 4 degree C and serve as a source of material for repeating the assay on a specific well if desired.

[1130] As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate Jurkat T cells. Over 30 fold induction is typically observed in the positive control wells.

[1131] The above protocol may be used in the generation of both transient, as well as stable, transfected cells, which would be apparent to those of skill in the art.

Example 33: High-Throughput Screening Assay Identifying Myeloid Activity

[1132] The following protocol is used to assess myeloid activity of polypeptide of the present invention by determining whether polypeptide of the present invention proliferates and/or differentiates myeloid cells. Myeloid cell activity is assessed using the GAS/SEAP/Neo construct produced in Example 31. Thus, factors that increase SEAP activity indicate the ability to activate the Jaks-STATS signal transduction pathway. The myeloid cell used in this assay is U937, a pre-monocyte cell line, although TF-1, HL60, or KG1 can be used.

[1133] To transiently transfect U937 cells with the GAS/SEAP/Neo construct produced in Example 31, a DEAE-Dextran method (Kharbanda et. al., 1994, Cell Growth & Differentiation, 5:259-265) is used. First, harvest $2x10^7$ U937 cells and wash with PBS. The U937 cells are usually grown in RPMI 1640 medium containing 10% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 mg/ml streptomycin.

[1134] Next, suspend the cells in 1 ml of 20 mM Tris-HCl (pH 7.4) buffer containing 0.5 mg/ml DEAE-Dextran, 8 ug GAS-SEAP2 plasmid DNA, 140 mM NaCl, 5 mM KCl, 375 uM $Na_2HPO_4.7H_2O$, 1 mM $MgCl_2$, and 675 uM $CaCl_2$. Incubate at 37 degrees C for 45 min.

[1135] Wash the cells with RPMI 1640 medium containing 10% FBS and then resuspend in 10 ml complete medium and incubate at 37 degree C for 36 hr.

[1136] The GAS-SEAP/U937 stable cells are obtained by growing the cells in 400 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 400 ug/ml G418 for couple of passages.

[1137] These cells are tested by harvesting $1x10^8$ cells (this is enough for ten 96-well plates assay) and wash with PBS. Suspend the cells in 200 ml above described growth medium, with a final density of $5x10^5$ cells/ml. Plate 200 ul cells per well in the 96-well plate (or $1x10^5$ cells/well).

[1138] Add 50 ul of the supernatant prepared by the protocol described in Example 30. Incubate at 37 degee C for 48 to 72 hr. As a positive control, 100 Unit/ml interferon gamma can be used which is known to activate U937 cells. Over 30 fold induction is typically observed in the positive control wells. SEAP assay the supernatant according to the protocol described in Example 36.

Example 34: High-Throughput Screening Assay Identifying Neuronal Activity.

[1139] When cells undergo differentiation and proliferation, a group of genes are activated through many different signal transduction pathways. One of these genes, EGR1

(early growth response gene 1), is induced in various tissues and cell types upon activation. The promoter of EGR1 is responsible for such induction. Using the EGR1 promoter linked to reporter molecules, activation of cells can be assessed by polypeptide of the present invention.

[1140] Particularly, the following protocol is used to assess neuronal activity in PC12 cell lines. PC12 cells (rat phenochromocytoma cells) are known to proliferate and/or differentiate by activation with a number of mitogens, such as TPA (tetradecanoyl phorbol acetate), NGF (nerve growth factor), and EGF (epidermal growth factor). The EGR1 gene expression is activated during this treatment. Thus, by stably transfecting PC12 cells with a construct containing an EGR promoter linked to SEAP reporter, activation of PC12 cells by polypeptide of the present invention can be assessed.

[1141] The EGR/SEAP reporter construct can be assembled by the following protocol. The EGR-1 promoter sequence (-633 to +1)(Sakamoto K et al., Oncogene 6:867-871 (1991)) can be PCR amplified from human genomic DNA using the following primers:

5' GCGCTCGAGGGATGACAGCGATAGAACCCCGG -3' (SEQ ID NO: 6)

5' GCGAAGCTTCGCGACTCCCCGGATCCGCCTC-3' (SEQ ID NO: 7)

[1142] Using the GAS:SEAP/Neo vector produced in Example 31, EGR1 amplified product can then be inserted into this vector. Linearize the GAS:SEAP/Neo vector using restriction enzymes XhoI/HindIII, removing the GAS/SV40 stuffer. Restrict the EGR1 amplified product with these same enzymes. Ligate the vector and the EGR1 promoter.

[1143] To prepare 96 well-plates for cell culture, two mls of a coating solution (1:30 dilution of collagen type I (Upstate Biotech Inc. Cat#08-115) in 30% ethanol (filter sterilized)) is added per one 10 cm plate or 50 ml per well of the 96-well plate, and allowed to air dry for 2 hr.

[1144] PC12 cells are routinely grown in RPMI-1640 medium (Bio Whittaker) containing 10% horse serum (JRH BIOSCIENCES, Cat. # 12449-78P), 5% heat-inactivated fetal bovine serum (FBS) supplemented with 100 units/ml penicillin and 100 ug/ml streptomycin on a precoated 10 cm tissue culture dish. One to four split is done

every three to four days. Cells are removed from the plates by scraping and resuspended with pipetting up and down for more than 15 times.

[1145] Transfect the EGR/SEAP/Neo construct into PC12 using the Lipofectamine protocol described in Example 30. EGR-SEAP/PC12 stable cells are obtained by growing the cells in 300 ug/ml G418. The G418-free medium is used for routine growth but every one to two months, the cells should be re-grown in 300 ug/ml G418 for couple of passages.

[1146] To assay for neuronal activity, a 10 cm plate with cells around 70 to 80% confluent is screened by removing the old medium. Wash the cells once with PBS (Phosphate buffered saline). Then starve the cells in low serum medium (RPMI-1640 containing 1% horse serum and 0.5% FBS with antibiotics) overnight.

[1147] The next morning, remove the medium and wash the cells with PBS. Scrape off the cells from the plate, suspend the cells well in 2 ml low serum medium. Count the cell number and add more low serum medium to reach final cell density as $5x10^5$ cells/ml.

[1148] Add 200 ul of the cell suspension to each well of 96-well plate (equivalent to $1x10^5$ cells/well). Add 50 ul supernatant produced by Example 30, 37 degree C for 48 to 72 hr. As a positive control, a growth factor known to activate PC12 cells through EGR can be used, such as 50 ng/ul of Neuronal Growth Factor (NGF). Over fifty-fold induction of SEAP is typically seen in the positive control wells. SEAP assay the supernatant according to Example 36.

Example 35: High-Throughput Screening Assay for T-cell Activity

[1149] NF-KB (Nuclear Factor KB) is a transcription factor activated by a wide variety of agents including the inflammatory cytokines IL-1 and TNF, CD30 and CD40, lymphotoxin-alpha and lymphotoxin-beta, by exposure to LPS or thrombin, and by expression of certain viral gene products. As a transcription factor, NF-KB regulates the expression of genes involved in immune cell activation, control of apoptosis (NF- KB

appears to shield cells from apoptosis), B and T-cell development, anti-viral and antimicrobial responses, and multiple stress responses.

[1150] In non-stimulated conditions, NF- KB is retained in the cytoplasm with I-KB (Inhibitor KB). However, upon stimulation, I- KB is phosphorylated and degraded, causing NF- KB to shuttle to the nucleus, thereby activating transcription of target genes. Target genes activated by NF- KB include IL-2, IL-6, GM-CSF, ICAM-1 and class 1 MHC.

[1151] Due to its central role and ability to respond to a range of stimuli, reporter constructs utilizing the NF-KB promoter element are used to screen the supernatants produced in Example 30. Activators or inhibitors of NF-KB would be useful in treating, preventing, and/or diagnosing diseases. For example, inhibitors of NF-KB could be used to treat those diseases related to the acute or chronic activation of NF-KB, such as rheumatoid arthritis.

[1152] To construct a vector containing the NF-KB promoter element, a PCR based strategy is employed. The upstream primer contains four tandem copies of the NF-KB binding site (GGGGACTTTCCC) (SEQ ID NO: 8), 18 bp of sequence complementary to the 5' end of the SV40 early promoter sequence, and is flanked with an XhoI site:

5':GCGGCCTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGAC
TTTCCATCCTGCCATCTCAATTAG:3' (SEQ ID NO: 9)

[1153] The downstream primer is complementary to the 3' end of the SV40 promoter and is flanked with a Hind III site:

5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO: 4)

[1154] PCR amplification is performed using the SV40 promoter template present in the pB-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI and Hind III and subcloned into BLSK2-. (Stratagene) Sequencing with the T7 and T3 primers confirms the insert contains the following sequence:

5':CTCGAGGGGACTTTCCCGGGGACTTTCCGGGGACTTTCCGGGACTTTCC
ATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCC
ATCCCGCCCCTAACTCCGCCCAGTTCCGCCCATTCTCCGCCCCATGGCTGA
CTAATTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTAT

TCCAGAAGTAGTGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAAGC TT:3' (SEQ ID NO: 10)

[1155] Next, replace the SV40 minimal promoter element present in the pSEAP2-promoter plasmid (Clontech) with this NF-KB/SV40 fragment using XhoI and HindIII. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

[1156] In order to generate stable mammalian cell lines, the NF-KB/SV40/SEAP cassette is removed from the above NF-KB/SEAP vector using restriction enzymes SalI and NotI, and inserted into a vector containing neomycin resistance. Particularly, the NF-KB/SV40/SEAP cassette was inserted into pGFP-1 (Clontech), replacing the GFP gene, after restricting pGFP-1 with SalI and NotI.

[1157] Once NF-KB/SV40/SEAP/Neo vector is created, stable Jurkat T-cells are created and maintained according to the protocol described in Example 32. Similarly, the method for assaying supernatants with these stable Jurkat T-cells is also described in Example 32. As a positive control, exogenous TNF alpha (0.1,1, 10 ng) is added to wells H9, H10, and H11, with a 5-10 fold activation typically observed.

Example 36: Assay for SEAP Activity

[1158] As a reporter molecule for the assays described in Examples 32-35, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

[1159] Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

[1160] Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the Table below). Add 50 ul Reaction Buffer and incubate at room temperature for 20

minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on a luminometer, thus one should treat 5 plates at each time and start the second set 10 minutes later.

[1161] Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

[1162] Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5
17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5

37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 37: High-Throughput Screening Assay Identifying Changes in Small Molecule Concentration and Membrane Permeability

[1163] Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

[1164] The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

[1165] For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO_2 incubator for 20

hours. The adherent cells are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

[1166] A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4 , 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO_2 incubator for 60 min. The plate is washed four times in the Biotek washer with HBSS leaving 100 ul of buffer.

[1167] For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2-5x10^6 cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to 1x10^6 cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.

[1168] For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4 . The supernatant is added to the well, and a change in fluorescence is detected.

[1169] To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present invention, which has resulted in an increase in the intracellular Ca^{++} concentration.

Example 38: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity

[1170] The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown.

Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

[1171] Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

[1172] Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

[1173] Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford,MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford,MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

[1174] To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes

treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 30, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na3VO4, 2 mM Na4P2O7 and a cocktail of protease inhibitors (# 1836170) obtained from Boeheringer Mannheim (Indianapolis, IN)) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4°C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well, after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

[1175] Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

[1176] Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from Boehringer Mannheim.

[1177] The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg_{2+} (5mM ATP/50mM $MgCl_2$), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM $MgCl_2$, 5 mM $MnCl_2$, 0.5 mg/ml BSA), then 5ul of Sodium Vanadate (1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

[1178] The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mm EDTA and place the reactions on ice.

[1179] Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20

min. This allows the streptavidin coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phospotyrosine antibody conjugated to horse radish peroxidase (anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for one hour. Wash the well as above.

[1180] Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

Example 39: High-Throughput Screening Assay Identifying Phosphorylation Activity

[1181] As a potential alternative and/or complement to the assay of protein tyrosine kinase activity described in Example 38, an assay which detects activation (phosphorylation) of major intracellular signal transduction intermediates can also be used. For example, as described below one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting these molecules for Erk-1 or Erk-2 in the following assay.

[1182] Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

[1183] A431 cells are seeded at 20,000/well in a 96-well Loprodyne filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 30 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

[1184] After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule induced by polypeptide of the present invention.

Example 40: Assay for the Stimulation of Bone Marrow CD34+ Cell Proliferation

[1185] This assay is based on the ability of human CD34+ to proliferate in the presence of hematopoietic growth factors and evaluates the ability of isolated polypeptides expressed in mammalian cells to stimulate proliferation of CD34+ cells.

[1186] It has been previously shown that most mature precursors will respond to only a single signal. More immature precursors require at least two signals to respond. Therefore, to test the effect of polypeptides on hematopoietic activity of a wide range of progenitor cells, the assay contains a given polypeptide in the presence or absence of other hematopoietic growth factors. Isolated cells are cultured for 5 days in the presence of Stem Cell Factor (SCF) in combination with tested sample. SCF alone has a very limited effect on the proliferation of bone marrow (BM) cells, acting in such conditions only as a "survival" factor. However, combined with any factor exhibiting stimulatory effect on these cells (e.g., IL-3), SCF will cause a synergistic effect. Therefore, if the tested

polypeptide has a stimulatory effect on hematopoietic progenitors, such activity can be easily detected. Since normal BM cells have a low level of cycling cells, it is likely that any inhibitory effect of a given polypeptide, or agonists or antagonists thereof, might not be detected. Accordingly, assays for an inhibitory effect on progenitors is preferably tested in cells that are first subjected to *in vitro* stimulation with SCF+IL+3, and then contacted with the compound that is being evaluated for inhibition of such induced proliferation.

[1187] Briefly, CD34+ cells are isolated using methods known in the art. The cells are thawed and resuspended in medium (QBSF 60 serum-free medium with 1% L-glutamine (500ml) Quality Biological, Inc., Gaithersburg, MD Cat# 160-204-101). After several gentle centrifugation steps at 200 x g, cells are allowed to rest for one hour. The cell count is adjusted to 2.5 x 10^5 cells/ml. During this time, 100 µl of sterile water is added to the peripheral wells of a 96-well plate. The cytokines that can be tested with a given polypeptide in this assay is rhSCF (R&D Systems, Minneapolis, MN, Cat# 255-SC) at 50 ng/ml alone and in combination with rhSCF and rhIL-3 (R&D Systems, Minneapolis, MN, Cat# 203-ML) at 30 ng/ml. After one hour, 10 µl of prepared cytokines, 50 µl of the supernatants prepared in Example 30 (supernatants at 1:2 dilution = 50 µl) and 20 µl of diluted cells are added to the media which is already present in the wells to allow for a final total volume of 100 µl. The plates are then placed in a 37°C/5% CO_2 incubator for five days.

[1188] Eighteen hours before the assay is harvested, 0.5 µCi/well of [3H] Thymidine is added in a 10 µl volume to each well to determine the proliferation rate. The experiment is terminated by harvesting the cells from each 96-well plate to a filtermat using the Tomtec Harvester 96. After harvesting, the filtermats are dried, trimmed and placed into OmniFilter assemblies consisting of one OmniFilter plate and one OmniFilter Tray. 60 µl Microscint is added to each well and the plate sealed with TopSeal-A press-on sealing film A bar code 15 sticker is affixed to the first plate for counting. The sealed plates are then loaded and the level of radioactivity determined via the Packard Top Count and the printed data collected for analysis. The level of radioactivity reflects the amount of cell proliferation.

[1189] The studies described in this example test the activity of a given polypeptide to stimulate bone marrow CD34+ cell proliferation. One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof. As a nonlimiting example, potential antagonists tested in this assay would be expected to inhibit cell proliferation in the presence of cytokines and/or to increase the inhibition of cell proliferation in the presence of cytokines and a given polypeptide. In contrast, potential agonists tested in this assay would be expected to enhance cell proliferation and/or to decrease the inhibition of cell proliferation in the presence of cytokines and a given polypeptide.

[1190] The ability of a gene to stimulate the proliferation of bone marrow CD34+ cells indicates that polynucleotides and polypeptides corresponding to the gene are useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein.

Example 41: Assay for Extracellular Matrix Enhanced Cell Response (EMECR)

[1191] The objective of the Extracellular Matrix Enhanced Cell Response (EMECR) assay is to identify gene products (e.g., isolated polypeptides) that act on the hematopoietic stem cells in the context of the extracellular matrix (ECM) induced signal.

[1192] Cells respond to the regulatory factors in the context of signal(s) received from the surrounding microenvironment. For example, fibroblasts, and endothelial and epithelial stem cells fail to replicate in the absence of signals from the ECM. Hematopoietic stem cells can undergo self-renewal in the bone marrow, but not in *in vitro* suspension culture. The ability of stem cells to undergo self-renewal *in vitro* is dependent upon their interaction with the stromal cells and the ECM protein fibronectin (fn). Adhesion of cells to fn is mediated by the $\alpha_5.\beta_1$ and $\alpha_4.\beta_1$ integrin receptors, which are expressed by human and mouse hematopoietic stem cells. The factor(s) which integrate with the ECM environment and are responsible for stimulating stem cell self-renewal have

not yet been identified. Discovery of such factors should be of great interest in gene therapy and bone marrow transplant applications

[1193] Briefly, polystyrene, non tissue culture treated, 96-well plates are coated with fn fragment at a coating concentration of 0.2 μg/ cm^2. Mouse bone marrow cells are plated (1,000 cells/well) in 0.2 ml of serum-free medium. Cells cultured in the presence of IL-3 (5 ng/ml) + SCF (50 ng/ml) would serve as the positive control, conditions under which little self-renewal but pronounced differentiation of the stem cells is to be expected. Gene products of the invention (e.g., including, but not limited to, polynucleotides and polypeptides of the present invention, and supernatants produced in Example 30), are tested with appropriate negative controls in the presence and absence of SCF(5.0 ng/ml), where test factor supernatants represent 10% of the total assay volume. The plated cells are then allowed to grow by incubating in a low oxygen environment (5% CO_2, 7% O_2, and 88% N_2) tissue culture incubator for 7 days. The number of proliferating cells within the wells is then quantitated by measuring thymidine incorporation into cellular DNA. Verification of the positive hits in the assay will require phenotypic characterization of the cells, which can be accomplished by scaling up of the culture system and using appropriate antibody reagents against cell surface antigens and FACScan.

[1194] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

[1195] If a particular polypeptide of the present invention is found to be a stimulator of hematopoietic progenitors, polynucleotides and polypeptides corresponding to the gene encoding said polypeptide may be useful for the diagnosis and treatment of disorders affecting the immune system and hematopoiesis. Representative uses are described in the "Immune Activity" and "Infectious Disease" sections above, and elsewhere herein. The gene product may also be useful in the expansion of stem cells and committed progenitors of various blood lineages, and in the differentiation and/or proliferation of various cell types.

[1196] Additionally, the polynucleotides and/or polypeptides of the gene of interest and/or agonists and/or antagonists thereof, may also be employed to inhibit the

proliferation and differentiation of hematopoietic cells and therefore may be employed to protect bone marrow stem cells from chemotherapeutic agents during chemotherapy. This antiproliferative effect may allow administration of higher doses of chemotherapeutic agents and, therefore, more effective chemotherapeutic treatment.

[1197] Moreover, polynucleotides and polypeptides corresponding to the gene of interest may also be useful for the treatment and diagnosis of hematopoietic related disorders such as, for example, anemia, pancytopenia, leukopenia, thrombocytopenia or leukemia since stromal cells are important in the production of cells of hematopoietic lineages. The uses include bone marrow cell ex-vivo culture, bone marrow transplantation, bone marrow reconstitution, radiotherapy or chemotherapy of neoplasia.

Example 42: Human Dermal Fibroblast and Aortic Smooth Muscle Cell Proliferation

[1198] The polypeptide of interest is added to cultures of normal human dermal fibroblasts (NHDF) and human aortic smooth muscle cells (AoSMC) and two co-assays are performed with each sample. The first assay examines the effect of the polypeptide of interest on the proliferation of normal human dermal fibroblasts (NHDF) or aortic smooth muscle cells (AoSMC). Aberrant growth of fibroblasts or smooth muscle cells is a part of several pathological processes, including fibrosis, and restenosis. The second assay examines IL6 production by both NHDF and SMC. IL6 production is an indication of functional activation. Activated cells will have increased production of a number of cytokines and other factors, which can result in a proinflammatory or immunomodulatory outcome. Assays are run with and without co-TNFa stimulation, in order to check for costimulatory or inhibitory activity.

[1199] Briefly, on day 1, 96-well black plates are set up with 1000 cells/well (NHDF) or 2000 cells/well (AoSMC) in 100 µl culture media. NHDF culture media contains: Clonetics FB basal media, 1mg/ml hFGF, 5mg/ml insulin, 50mg/ml gentamycin, 2%FBS, while AoSMC culture media contains Clonetics SM basal media, 0.5 µg/ml hEGF, 5mg/ml insulin, 1µg/ml hFGF, 50mg/ml gentamycin, 50 µg/ml Amphotericin B,

5%FBS. After incubation at 37°C for at least 4-5 hours culture media is aspirated and replaced with growth arrest media. Growth arrest media for NHDF contains fibroblast basal media, 50mg/ml gentamycin, 2% FBS, while growth arrest media for AoSMC contains SM basal media, 50mg/ml gentamycin, 50μg/ml Amphotericin B, 0.4% FBS. Incubate at 37 °C until day 2.

[1200] On day 2, serial dilutions and templates of the polypeptide of interest are designed such that they always include media controls and known-protein controls. For both stimulation and inhibition experiments, proteins are diluted in growth arrest media. For inhibition experiments, TNFa is added to a final concentration of 2ng/ml (NHDF) or 5ng/ml (AoSMC). Add 1/3 vol media containing controls or polypeptides of the present invention and incubate at 37 degrees C/5% CO_2 until day 5.

[1201] Transfer 60μl from each well to another labeled 96-well plate, cover with a plate-sealer, and store at 4 degrees C until Day 6 (for IL6 ELISA). To the remaining 100 μl in the cell culture plate, aseptically add Alamar Blue in an amount equal to 10% of the culture volume (10μl). Return plates to incubator for 3 to 4 hours. Then measure fluorescence with excitation at 530nm and emission at 590nm using the CytoFluor. This yields the growth stimulation/inhibition data.

[1202] On day 5, the IL6 ELISA is performed by coating a 96 well plate with 50-100 ul/well of Anti-Human IL6 Monoclonal antibody diluted in PBS, pH 7.4, incubate ON at room temperature.

[1203] On day 6, empty the plates into the sink and blot on paper towels. Prepare Assay Buffer containing PBS with 4% BSA. Block the plates with 200 μl/well of Pierce Super Block blocking buffer in PBS for 1-2 hr and then wash plates with wash buffer (PBS, 0.05% Tween-20). Blot plates on paper towels. Then add 50 μl/well of diluted Anti-Human IL-6 Monoclonal, Biotin-labeled antibody at 0.50 mg/ml. Make dilutions of IL-6 stock in media (30, 10, 3, 1, 0.3, 0 ng/ml). Add duplicate samples to top row of plate. Cover the plates and incubate for 2 hours at RT on shaker.

[1204] Plates are washed with wash buffer and blotted on paper towels. Dilute EU-labeled Streptavidin 1:1000 in Assay buffer, and add 100 μl/well. Cover the plate and incubate 1 h at RT. Plates are again washed with wash buffer and blotted on paper towels.

[1205] Add 100 µl/well of Enhancement Solution. Shake for 5 minutes. Read the plate on the Wallac DELFIA Fluorometer. Readings from triplicate samples in each assay were tabulated and averaged.

[1206] A positive result in this assay suggests AoSMC cell proliferation and that the polypeptide of the present invention may be involved in dermal fibroblast proliferation and/or smooth muscle cell proliferation. A positive result also suggests many potential uses of polypeptides, polynucleotides, agonists and/or antagonists of the polynucleotide/polypeptide of the present invention which gives a positive result. For example, inflammation and immune responses, wound healing, and angiogenesis, as detailed throughout this specification. Particularly, polypeptides of the present invention and polynucleotides of the present invention may be used in wound healing and dermal regeneration, as well as the promotion of vasculogenesis, both of the blood vessels and lymphatics. The growth of vessels can be used in the treatment of, for example, cardiovascular diseases. Additionally, antagonists of polypeptides and polynucleotides of the invention may be useful in treating diseases, disorders, and/or conditions which involve angiogenesis by acting as an anti-vascular agent (e.g., anti-angiogenesis). These diseases, disorders, and/or conditions are known in the art and/or are described herein, such as, for example, malignancies, solid tumors, benign tumors, for example hemangiomas, acoustic neuromas, neurofibromas, trachomas, and pyogenic granulomas; artheroscleric plaques; ocular angiogenic diseases, for example, diabetic retinopathy, retinopathy of prematurity, macular degeneration, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, rubeosis, retinoblastoma, uvietis and Pterygia (abnormal blood vessel growth) of the eye; rheumatoid arthritis; psoriasis; delayed wound healing; endometriosis; vasculogenesis; granulations; hypertrophic scars (keloids); nonunion fractures; scleroderma; trachoma; vascular adhesions; myocardial angiogenesis; coronary collaterals; cerebral collaterals; arteriovenous malformations; ischemic limb angiogenesis; Osler-Webber Syndrome; plaque neovascularization; telangiectasia; hemophiliac joints; angiofibroma; fibromuscular dysplasia; wound granulation; Crohn's disease; and atherosclerosis. Moreover, antagonists of polypeptides and polynucleotides of the invention may be useful in treating anti-hyperproliferative diseases and/or anti-inflammatory known in the art and/or described herein.

[1207] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 43: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells

[1208] The recruitment of lymphocytes to areas of inflammation and angiogenesis involves specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules and others on the vascular endothelium determines the efficiency with which leukocytes may adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

[1209] Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100 µl of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 µl volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 µl of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10 µl of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 µg/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified

environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 µl of diluted ExtrAvidin-Alkaline Phosphatase (1:5,000 dilution, referred to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 µl of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphotase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 µl of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 µl of pNNP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 µl of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

Example 44: Alamar Blue Endothelial Cells Proliferation Assay

[1210] This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

[1211] Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37degrees C overnight. After the overnight incubation of the cells, the growth media is removed and replaced with

GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

[1212] Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced (fluorescent red) form (i.e., stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity). The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

Example 45: Detection of Inhibition of a Mixed Lymphocyte Reaction

[1213] This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

[1214] Polypeptides of interest found to inhibit the MLR may find application in diseases associated with lymphocyte and monocyte activation or proliferation. These

include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

[1215] Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM®, density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to 2 x 10^6 cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to 2 x 10^5 cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50 µl) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1 µg/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10 µg/ml. Cells are cultured for 7-8 days at 37°C in 5% CO_2, and 1 µC of [^{3}H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

[1216] Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

[1217] One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 46: Assays for Protease Activity

[1218] The following assay may be used to assess protease activity of the polypeptides of the invention.

[1219] Gelatin and casein zymography are performed essentially as described (Heusen et al., Anal. Biochem., 102:196-202 (1980); Wilson et al., Journal of Urology, 149:653-658 (1993)). Samples are run on 10% polyacryamide/0.1% SDS gels containing 1% gelain orcasein, soaked in 2.5% triton at room temperature for 1 hour, and in 0.1M glycine, pH 8.3 at 37°C 5 to 16 hours. After staining in amido black areas of proteolysis apear as clear areas agains the blue-black background. Trypsin (Sigma T8642) is used as a positive control.

[1220] Protease activity is also determined by monitoring the cleavage of n-a-benzoyl-L-arginine ethyl ester (BAEE) (Sigma B-4500. Reactions are set up in (25mMNaPO$_4$,1mM EDTA, and 1mM BAEE), pH 7.5. Samples are added and the change in adsorbance at 260nm is monitored on the Beckman DU-6 spectrophotometer in the time-drive mode. Trypsin is used as a positive control.

[1221] Additional assays based upon the release of acid-soluble peptides from casein or hemoglobin measured as adsorbance at 280 nm or colorimetrically using the Folin method are performed as described in Bergmeyer, et al., Methods of Enzymatic Analysis, 5 (1984). Other assays involve the solubilization of chromogenic substrates (Ward, Applied Science, 251-317 (1983).

Example 47: Identifying Serine Protease Substrate Specificity

[1222] Methods known in the art or described herein may be used to determine the substrate specificity of the polypeptides of the present invention having serine protease activity. A preferred method of determining substrate specificity is by the use of positional scanning synthetic combinatorial libraries as described in GB 2 324 529 (incorporated herein in its entirety).

Example 48: Ligand Binding Assays

[1223] The following assay may be used to assess ligand binding activity of the polypeptides of the invention.

[1224] Ligand binding assays provide a direct method for ascertaining receptor pharmacology and are adaptable to a high throughput format. The purified ligand for a polypeptide is radiolabeled to high specific activity (50-2000 Ci/mmol) for binding studies. A determination is then made that the process of radiolabeling does not diminish the activity of the ligand towards its polypeptide. Assay conditions for buffers, ions, pH and other modulators such as nucleotides are optimized to establish a workable signal to noise ratio for both membrane and whole cell polypeptide sources. For these assays, specific polypeptide binding is defined as total associated radioactivity minus the radioactivity measured in the presence of an excess of unlabeled competing ligand. Where possible, more than one competing ligand is used to define residual nonspecific binding.

Example 49: Functional Assay in Xenopus Oocytes

[1225] Capped RNA transcripts from linearized plasmid templates encoding the polypeptides of the invention are synthesized *in vitro* with RNA polymerases in accordance with standard procedures. *In vitro* transcripts are suspended in water at a final concentration of 0.2 mg/mi. Ovarian lobes are removed from adult female toads, Stage V defolliculated oocytes are obtained, and RNA transcripts (10 ng/oocytc) are injected in a 50 nl bolus using a microinjection apparatus. Two electrode voltage clamps are used to measure the currents from individual *Xenopus oocytes* in response polypeptides and polypeptide agonist exposure. Recordings are made in Ca2+ free Barth's medium at room temperature. The Xenopus system can be used to screen known ligands and tissue/cell extracts for activating ligands.

Example 50: Microphysiometric Assays

[1226] Activation of a wide variety of secondary messenger systems results in extrusion of small amounts of acid from a cell. The acid formed is largely as a result of the increased metabolic activity required to fuel the intracellular signaling process. The pH

changes in the media surrounding the cell are very small but are detectable by the CYTOSENSOR microphysiometer (Molecular Devices Ltd., Menlo Park, Calif.). The CYTOSENSOR is thus capable of detecting the activation of polypeptide which is coupled to an energy utilizing intracellular signaling pathway.

Example 51: Extract/Cell Supernatant Screening

[1227] A large number of mammalian receptors exist for which there remains, as yet, no cognate activating ligand (agonist). Thus, active ligands for these receptors may not be included within the ligands banks as identified to date. Accordingly, the polypeptides of the invention can also be functionally screened (using calcium, cAMP, microphysiometer, oocyte electrophysiology, etc., functional screens) against tissue extracts to identify its natural ligands. Extracts that produce positive functional responses can be sequentially subfractionated until an activating ligand is isolated and identified.

Example 52: Calcium and cAMP Functional Assays

[1228] Seven transmembrane receptors which are expressed in HEK 293 cells have been shown to be coupled functionally to activation of PLC and calcium mobilization and/or cAMP stimulation or inhibition. Basal calcium levels in the HEK 293 cells in receptor-transfected or vector control cells were observed to be in the normal, 100 nM to 200 nM, range. HEK 293 cells expressing recombinant receptors are loaded with fura 2 and in a single day >150 selected ligands or tissue/cell extracts are evaluated for agonist induced calcium mobilization. Similarly, HEK 293 cells expressing recombinant receptors are evaluated for the stimulation or inhibition of cAMP production using standard cAMP quantitation assays. Agonists presenting a calcium transient or cAMP fluctuation are tested in vector control cells to determine if the response is unique to the transfected cells expressing receptor.

Example 53: ATP-binding assay

[1229] The following assay may be used to assess ATP-binding activity of polypeptides of the invention.

[1230] ATP-binding activity of the polypeptides of the invention may be detected using the ATP-binding assay described in U.S. Patent 5,858,719, which is herein incorporated by reference in its entirety. Briefly, ATP-binding to polypeptides of the invention is measured via photoaffinity labeling with 8-azido-ATP in a competition assay. Reaction mixtures containing 1 mg/ml of the ABC transport protein of the present invention are incubated with varying concentrations of ATP, or the non-hydrolyzable ATP analog adenyl-5'-imidodiphosphate for 10 minutes at 4°C. A mixture of 8-azido-ATP (Sigma Chem. Corp., St. Louis, MO.) plus 8-azido-ATP (^{32}P-ATP) (5 mCi/μmol, ICN, Irvine CA.) is added to a final concentration of 100 μM and 0.5 ml aliquots are placed in the wells of a porcelain spot plate on ice. The plate is irradiated using a short wave 254 nm UV lamp at a distance of 2.5 cm from the plate for two one-minute intervals with a one-minute cooling interval in between. The reaction is stopped by addition of dithiothreitol to a final concentration of 2mM. The incubations are subjected to SDS-PAGE electrophoresis, dried, and autoradiographed. Protein bands corresponding to the particular polypeptides of the invention are excised, and the radioactivity quantified. A decrease in radioactivity with increasing ATP or adenly-5'-imidodiphosphate provides a measure of ATP affinity to the polypeptides.

Example 54: Small Molecule Screening

[1231] This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding

assays. One may measure, for example, the formulation of complexes between the agent being tested and polypeptide of the invention.

[1232] Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the invention. These methods comprise contacting such an agent with a polypeptide of the invention or fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the invention.

[1233] Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is herein incorporated by reference in its entirety. Briefly stated, large numbers of different small molecule test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The test compounds are reacted with polypeptides of the invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

[1234] This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

Example 55: Phosphorylation Assay

[1235] In order to assay for phosphorylation activity of the polypeptides of the invention, a phosphorylation assay as described in U.S. Patent 5,958,405 (which is herein incorporated by reference) is utilized. Briefly, phosphorylation activity may be measured

by phosphorylation of a protein substrate using gamma-labeled ^{32}P-ATP and quantitation of the incorporated radioactivity using a gamma radioisotope counter. The polypeptides of the invention are incubated with the protein substrate, ^{32}P-ATP, and a kinase buffer. The ^{32}P incorporated into the substrate is then separated from free ^{32}P-ATP by electrophoresis, and the incorporated ^{32}P is counted and compared to a negative control. Radioactivity counts above the negative control are indicative of phosphorylation activity of the polypeptides of the invention.

Example 56: Detection of Phosphorylation Activity (Activation) of the Polypeptides of the Invention in the Presence of Polypeptide Ligands

[1236] Methods known in the art or described herein may be used to determine the phosphorylation activity of the polypeptides of the invention. A preferred method of determining phosphorylation activity is by the use of the tyrosine phosphorylation assay as described in U.S. Patent 5,817,471 (incorporated herein by reference).

Example 57: Identification Of Signal Transduction Proteins That Interact With Polypeptides Of The Present Invention

[1237] The purified polypeptides of the invention are research tools for the identification, characterization and purification of additional signal transduction pathway proteins or receptor proteins. Briefly, labeled receptor PTK polypeptide is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, receptor PTK polypeptide is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as carcinoma tissues, is passed over the column, and molecules with appropriate affinity bind to the receptor PTK polypeptides, or specific phosphotyrosine-recognition domains thereof. The receptor PTK polypeptide interacting protein-complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid

sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

Example 58: IL-6 Bioassay

[1238] To test the proliferative effects of the polypeptides of the invention, the IL-6 Bioassay as described by Marz *et al.* is utilized (*Proc. Natl. Acad. Sci., U.S.A., 95*:3251-56 (1998), which is herein incorporated by reference). Briefly, IL-6 dependent B9 murine cells are washed three times in IL-6 free medium and plated at a concentration of 5,000 cells per well in 50 µl, and 50 µl of the IL-6-like polypeptide is added. After 68 hrs. at 37°C, the number of viable cells is measured by adding the tetrazolium salt thiazolyl blue (MTT) and incubating for a further 4 hrs. at 37°C. B9 cells are lysed by SDS and optical density is measured at 570 nm. Controls containing IL-6 (positive) and no cytokine (negative) are utilized. Enhanced proliferation in the test sample(s) relative to the negative control is indicative of proliferative effects mediated by polypeptides of the invention.

Example 59: Support of Chicken Embryo Neuron Survival

[1239] To test whether sympathetic neuronal cell viability is supported by polypeptides of the invention, the chicken embryo neuronal survival assay of Senaldi *et al* is utilized (*Proc. Natl. Acad. Sci., U.S.A., 96*:11458-63 (1998), which is herein incorporated by reference). Briefly, motor and sympathetic neurons are isolated from chicken embryos, resuspended in L15 medium (with 10% FCS, glucose, sodium selenite, progesterone, conalbumin, putrescine, and insulin; Life Technologies, Rockville, MD.) and Dulbecco's modified Eagles medium [with 10% FCS, glutamine, penicillin, and 25 mM Hepes buffer (pH 7.2); Life Technologies, Rockville, MD.], respectively, and incubated at 37°C in 5% CO_2 in the presence of different concentrations of the purified IL-6-like polypeptide, as well as a negative control lacking any cytokine. After 3 days, neuron survival is determined by evaluation of cellular morphology, and through the use of the colorimetric assay of Mosmann (Mossman, T., J. Immunol. Methods, 65:55-63 (1983)). Enhanced neuronal cell viability as compared to the controls lacking cytokine is indicative

of the ability of the inventive purified IL-6-like polypeptide(s) to enhance the survival of neuronal cells.

Example 60: Assay for Phosphatase Activity

[1240] The following assay may be used to assess serine/threonine phosphatase (PTPase) activity of the polypeptides of the invention.

[1241] In order to assay for serine/threonine phosphatase (PTPase) activity, assays can be utilized which are widely known to those skilled in the art. For example, the serine/threonine phosphatase (PSPase) activity is measured using a PSPase assay kit from New England Biolabs, Inc. Myelin basic protein (MyBP), a substrate for PSPase, is phosphorylated on serine and threonine residues with cAMP-dependent Protein Kinase in the presence of [^{32}P]ATP. Protein serine/threonine phosphatase activity is then determined by measuring the release of inorganic phosphate from 32P-labeled MyBP.

Example 61: Interaction of Serine/Threonine Phosphatases with other Proteins

[1242] The polypeptides of the invention with serine/threonine phosphatase activity as determined in Example 60 are research tools for the identification, characterization and purification of additional interacting proteins or receptor proteins, or other signal transduction pathway proteins. Briefly, labeled polypeptide(s) of the invention is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, polypeptide of the invention is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as neural or liver cells, is passed over the column, and molecules with appropriate affinity bind to the polypeptides of the invention. The polypeptides of the invention -complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

Example 62: Assaying for Heparanase Activity

[1243] In order to assay for heparanase activity of the polypeptides of the invention, the heparanase assay described by Vlodavsky et al is utilized (Vlodavsky, I., et al., Nat. Med., 5:793-802 (1999)). Briefly, cell lysates, conditioned media or intact cells (1 x 10^6 cells per 35-mm dish) are incubated for 18 hrs at 37°C, pH 6.2-6.6, with ^{35}S-labeled ECM or soluble ECM derived peak I proteoglycans. The incubation medium is centrifuged and the supernatant is analyzed by gel filtration on a Sepharose CL-6B column (0.9 x 30 cm). Fractions are eluted with PBS and their radioactivity is measured. Degradation fragments of heparan sulfate side chains are eluted from Sepharose 6B at $0.5 < K_{av} < 0.8$ (peak II). Each experiment is done at least three times. Degradation fragments corresponding to "peak II," as described by Vlodavsky et al., is indicative of the activity of the polypeptides of the invention in cleaving heparan sulfate.

Example 63: Immobilization of biomolecules

[1244] This example provides a method for the stabilization of polypeptides of the invention in non-host cell lipid bilayer constucts (see, e.g., Bieri et al., Nature Biotech 17:1105-1108 (1999), hereby incorporated by reference in its entirety herein) which can be adapted for the study of polypeptides of the invention in the various functional assays described above. Briefly, carbohydrate-specific chemistry for biotinylation is used to confine a biotin tag to the extracellular domain of the polypeptides of the invention, thus allowing uniform orientation upon immobilization. A 50uM solution of polypeptides of the invention in washed membranes is incubated with 20 mM NaIO4 and 1.5 mg/ml (4mM) BACH or 2 mg/ml (7.5mM) biotin-hydrazide for 1 hr at room temperature (reaction volume, 150ul). Then the sample is dialyzed (Pierce Slidealizer Cassett, 10 kDa cutoff; Pierce Chemical Co., Rockford IL) at 4C first for 5 h, exchanging the buffer after each hour, and finally for 12 h against 500 ml buffer R (0.15 M NaCl, 1 mM MgCl2, 10 mM sodium phosphate, pH7). Just before addition into a cuvette, the sample is diluted 1:5

in buffer ROG50 (Buffer R supplemented with 50 mM octylglucoside).

Example 64: TAQMAN

[1245] Quantitative PCR (QPCR). Total RNA from cells in culture are extracted by Trizol separation as recommended by the supplier (LifeTechnologies). (Total RNA is treated with DNase I (Life Technologies) to remove any contaminating genomic DNA before reverse transcription.) Total RNA (50 ng) is used in a one-step, 50ul, RT-QPCR, consisting of Taqman Buffer A (Perkin-Elmer; 50 mM KCl/10 mM Tris, pH 8.3), 5.5 mM $MgCl_2$, 240 μM each dNTP, 0.4 units RNase inhibitor(Promega), 8%glycerol, 0.012% Tween-20, 0.05% gelatin, 0.3uM primers, 0.1uM probe, 0.025units Amplitaq Gold (Perkin-Elmer) and 2.5 units Superscript II reverse transcriptase (Life Technologies). As a control for genomic contamination, parallel reactions are setup without reverse transcriptase. The relative abundance of (unknown) and 18S RNAs are assessed by using the Applied Biosystems Prism 7700 Sequence Detection System (Livak, K. J., Flood, S. J., Marmaro, J., Giusti, W. & Deetz, K. (1995) PCR Methods Appl. 4, 357-362). Reactions are carried out at 48°C for 30 min, 95°C for 10 min, followed by 40 cycles of 95°C for 15s, 60°C for 1 min. Reactions are performed in triplicate.

[1246] Primers (f & r) and FRET probes sets are designed using Primer Express Software (Perkin-Elmer). Probes are labeled at the 5'-end with the reporter dye 6-FAM and on the 3'-end with the quencher dye TAMRA (Biosource International, Camarillo, CA or Perkin-Elmer).

Example 65: Assays for Metalloproteinase Activity

[1247] Metalloproteinases (EC 3.4.24.-) are peptide hydrolases which use metal ions, such as Zn^{2+}, as the catalytic mechanism. Metalloproteinase activity of polypeptides of the present invention can be assayed according to the following methods.

Proteolysis of alpha-2-macroglobulin

[1248] To confirm protease activity, purified polypeptides of the invention are mixed with the substrate alpha-2-macroglobulin (0.2 unit/ml; Boehringer Mannheim, Germany) in 1x assay buffer (50 mM HEPES, pH 7.5, 0.2 M NaCl, 10 mM $CaCl_2$, 25 μM $ZnCl_2$ and 0.05% Brij-35) and incubated at 37°C for 1-5 days. Trypsin is used as positive control. Negative controls contain only alpha-2-macroglobulin in assay buffer. The samples are collected and boiled in SDS-PAGE sample buffer containing 5% 2-mercaptoethanol for 5-min, then loaded onto 8% SDS-polyacrylamide gel. After electrophoresis the proteins are visualized by silver staining. Proteolysis is evident by the appearance of lower molecular weight bands as compared to the negative control.

Inhibition of alpha-2-macroglobulin proteolysis by inhibitors of metalloproteinases

[1249] Known metalloproteinase inhibitors (metal chelators (EDTA, EGTA, AND $HgCl_2$), peptide metalloproteinase inhibitors (TIMP-1 and TIMP–2), and commercial small molecule MMP inhibitors) are used to characterize the proteolytic activity of polypeptides of the invention. The three synthetic MMP inhibitors used are: MMP inhibitor I, [IC_{50} = 1.0 μM against MMP-1 and MMP–8; IC_{50} = 30 μM against MMP-9; IC_{50} = 150 μM against MMP-3]; MMP-3 (stromelysin-1) inhibitor I [IC_{50} = 5 μM against MMP-3], and MMP-3 inhibitor II [K_i = 130 nM against MMP-3]; inhibitors available through Calbiochem, catalog # 444250, 444218, and 444225, respectively). Briefly, different concentrations of the small molecule MMP inhibitors are mixed with purified polypeptides of the invention (50μg/ml) in 22.9 μl of 1x HEPES buffer (50 mM HEPES, pH 7.5, 0.2 M NaCl, 10 mM $CaCl_2$, 25 μM $ZnCl_2$ and 0.05%Brij-35) and incubated at room temperature (24 °C) for 2-hr, then 7.1 μl of substrate alpha-2-macroglobulin (0.2 unit/ml) is added and incubated at 37°C for 20-hr. The reactions are stopped by adding 4x sample buffer and boiled immediately for 5 minutes. After SDS-PAGE, the protein bands are visualized by silver stain.

Synthetic Fluorogenic Peptide Substrates Cleavage Assay

[1250] The substrate specificity for polypeptides of the invention with demonstrated metalloproteinase activity can be determined using synthetic fluorogenic peptide substrates (purchased from BACHEM Bioscience Inc). Test substrates include, M-

1985, M-2225, M-2105, M-2110, and M-2255. The first four are MMP substrates and the last one is a substrate of tumor necrosis factor-α (TNF-α) converting enzyme (TACE). All the substrates are prepared in 1:1 dimethyl sulfoxide (DMSO) and water. The stock solutions are 50-500 μM. Fluorescent assays are performed by using a Perkin Elmer LS 50B luminescence spectrometer equipped with a constant temperature water bath. The excitation λ is 328 nm and the emission λ is 393 nm. Briefly, the assay is carried out by incubating 176 μl 1x HEPES buffer (0.2 M NaCl, 10 mM $CaCl_2$, 0.05% Brij-35 and 50 mM HEPES, pH 7.5) with 4 μl of substrate solution (50 μM) at 25 °C for 15 minutes, and then adding 20 μl of a purified polypeptide of the invention into the assay cuvett. The final concentration of substrate is 1 μM. Initial hydrolysis rates are monitored for 30-min.

Example 66: Characterization of the cDNA contained in a deposited plasmid

[1251] The size of the cDNA insert contained in a deposited plasmid may be routinely determined using techniques known in the art, such as PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the cDNA sequence. For example, two primers of 17-30 nucleotides derived from each end of the cDNA (i.e., hybridizable to the absolute 5' nucleotide or the 3' nucleotide end of the sequence of SEQ ID NO:X, respectively) are synthesized and used to amplify the cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 ul of reaction mixture with 0.5 ug of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 uM each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94 degree C for 1 min; annealing at 55 degree C for 1 min; elongation at 72 degree C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

[1252] It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

[1253] The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. In addition, the paper copy and electronic copy of the sequence listing submitted herewith and the corresponding computer readable form are both incorporated herein by reference in their entireties. The specification and Sequence Listing of the following U.S. application are herein incorporated by reference in their entirety: Application No. 60/209,467, filed on 7-Jun-2000.

[1254] Moreover, the hard copy of and the corresponding computer readable form of the Sequence Listing of U.S. Application Serial No. 60/180,628 are also incorporated herein by reference in their entireties.

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209062

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 209062

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 209062

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

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Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209063

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

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ATCC Deposit No. 209063

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209063

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209064

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available, until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 209064

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209064

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209065

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209065

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209065

UNITED KINGDOM

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DENMARK

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NETHERLANDS

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(PCT Rule 13*bis*)

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Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209066

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 209066

CANADA

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NORWAY

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ATCC Deposit No.: 209066

UNITED KINGDOM

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(PCT Rule 13*bis*)

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Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 209067

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 209067

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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ATCC Deposit No. 209068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209068

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
May 20, 1997	209069

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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ATCC Deposit No. 209069

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209069

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
January 12, 1998	209579

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

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ATCC Deposit No. 209579

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209579

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
January 12, 1998	209578

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 209578

CANADA

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NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: 209578

UNITED KINGDOM

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DENMARK

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NETHERLANDS

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(PCT Rule 13*bis*)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
July 16, 1998	203067

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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ATCC Deposit No. 203067

CANADA

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ATCC Deposit No.: 203067

UNITED KINGDOM

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DENMARK

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
July 16, 1998	203068

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the international Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☒ This sheet was received by the International Bureau on: 10 JUL 2001
Authorized officer	Authorized officer CH

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 203068

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 203068

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
February 1, 1999	203609

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the international Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 203609

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 203609

UNITED KINGDOM

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DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
February 1, 1999	203610

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the international Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 203610

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 203610

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
November 17, 1998	203485

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. 203485

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: 203485

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later that at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
June 18, 1999	PTA-252

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Petro134ep.sollist

ATCC Deposit No. PTA-252

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

ATCC Deposit No.: PTA-252

UNITED KINGDOM

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DENMARK

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
June 18, 1999	PTA-253

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

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For receiving Office use only	For International Bureau use only
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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. PTA-253

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

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AUSTRALIA

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FINLAND

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ATCC Deposit No.: PTA-253

UNITED KINGDOM

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DENMARK

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SWEDEN

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NETHERLANDS

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INDICATIONS RELATING TO A DEPOSITED MICROORGANISM OR OTHER BIOLOGICAL MATERIAL

(PCT Rule 13*bis*)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description at Table 6.

B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet ☒

Name of depositary institution: American Type Culture Collection

Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
December 22, 1999	PTA-1081

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC). Continued on additional sheets

E. SEPARATE FURNISHING OF INDICATIONS *(leave blank if not applicable)*

The indications listed below will be submitted to the international Bureau later *(specify the general nature of the indications e.g., "Accession Number of Deposit")*

For receiving Office use only	For International Bureau use only
☐ This sheet was received with the international application	☒ This sheet was received by the International Bureau on: 10 JUL 2001
Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. PTA-1081

CANADA

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ATCC Deposit No.: PTA-1081

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NETHERLANDS

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Address of depositary institution *(including postal code and country)*
10801 University Boulevard
Manassas, Virginia 20110-2209
United States of America

Date of deposit	Accession Number
June 5, 2000	PTA-1982

C. ADDITIONAL INDICATIONS *(leave blank if not applicable)* This information is continued on an additional sheet ☐

D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE *(if the indications are not for all designated States)*

Europe
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Authorized officer	Authorized officer

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. PTA-1982

CANADA

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Authorized officer	Authorized officer CH

Revised Form PCT/RO/134 (January 2001) Pctro134ep.sollist

ATCC Deposit No. PTA-1985

CANADA

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ATCC Deposit No.: PTA-1985

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What Is Claimed Is:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X or a polynucleotide fragment of the cDNA sequence contained in Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;

(b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;

(c) a polynucleotide encoding a polypeptide fragment of a polypeptide encoded by SEQ ID NO:X or a polypeptide fragment encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;

(d) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y or a polypeptide domain encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;

(e) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:Y or a polypeptide epitope encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X;

(f) a polynucleotide encoding a polypeptide of SEQ ID NO:Y or the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X, having biological activity;

(g) a polynucleotide which is a variant of SEQ ID NO:X;

(h) a polynucleotide which is an allelic variant of SEQ ID NO:X;

(i) a polynucleotide which encodes a species homologue of the SEQ ID NO:Y;

(j) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(i), wherein said polynucleotide does not hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.

2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a protein.

3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:Y or the polypeptide encoded by the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X.

4. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:X or the cDNA sequence contained in cDNA Clone ID NO:Z, which is hybridizable to SEQ ID NO:X.

5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.

7. A recombinant vector comprising the isolated nucleic acid molecule of claim 1.

8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.

9. A recombinant host cell produced by the method of claim 8.

10. The recombinant host cell of claim 9 comprising vector sequences.

11. An isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence selected from the group consisting of:

(a) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;

(b) a polypeptide fragment of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z, having biological activity;

(c) a polypeptide domain of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;

(d) a polypeptide epitope of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;

(e) a full length protein of SEQ ID NO:Y or the encoded sequence contained in cDNA Clone ID NO:Z;

(f) a variant of SEQ ID NO:Y;

(g) an allelic variant of SEQ ID NO:Y; or

(h) a species homologue of the SEQ ID NO:Y.

12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.

13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.

14. A recombinant host cell that expresses the isolated polypeptide of claim 11.

15. A method of making an isolated polypeptide comprising:

(a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and

(b) recovering said polypeptide.

16. The polypeptide produced by claim 15.

17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polynucleotide of claim 1.

18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

21. The gene corresponding to the cDNA sequence of SEQ ID NO:Y.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:X in a cell;

(b) isolating the supernatant;

(c) detecting an activity in a biological assay; and

(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

24. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11.

INTERNATIONAL SEARCH REPORT

ational application No.
PCT/US01/18569

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :C07H 21/02, 21/04; C12N 1/20, 15/00, 15/09, 15/63, 15/70, 15/74

US CL :536/23.1; 435/252.3, 320.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1; 435/252.3, 320.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EST, Geneseq, GenBank, EMBL, SwissProt, PIR, Issued Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- Y	LINDESKOG, M. Isolation of Human Endogeneous Retroviral HERV-H Element with an Open env Reading Frame, June 1999, vol. 258, No. 2, page 441	1-10, 14 ---------- 15
A	STRAUBERG, R., GenBank Accession Number AI 354423, 15 February 1999	1-10, 14, 15, 21 (all in part), SEQ ID NO: 11 & 2186

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 14 AUGUST 2001	Date of mailing of the international search report 05 SEP 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer TERESA STRZELECKA Telephone No. (703) 308-0196

Form PCT/ISA/210 (second sheet) (July 1998)★

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US01/18569

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-10, 14, 15, 21 (all in part) SEQ ID NO:11, 2186

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

I ational application No.
PCT/US01/18569

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

1. Groups 1-2175, claims 1-10, 14, 15 and 21 (all in part), drawn to an isolated nucleic acid of SEQ ID NO:X or a peptide of SEQ ID NO:Y, wherein X and Y correlate to those listed in Table 1, and correspond to one of the cDNA clone IDs Z. For example,

If group 1 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein X is 11 and Y is 2186.

If group 2 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein X is 12 and Y is 2187.

2. Groups 2176-4350, claim(s) 11, 12, 16 and 23, all in part, each group directed to a peptide of SEQ ID NO; Y, wherein Y correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 2176 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein Y is 2186.

If group 74 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein Y is 2187.

3. Groups 4351-6525, claim 13, in part, drawn to an isolated antibody which binds to a protein with SEQ ID NO Y, wherein Y correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 4351 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein Y is 2186.

If group 4352 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein Y is 2187.

4. Groups 6526-8700, claim 17, in part, drawn to a method for preventing, treating or ameliorating an undefined medical condition by administering a polynucleotide of SEQ ID NO X, wherein X correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 6526 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein X is 11.

If group 6527 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein X is 12.

5. Groups 8701-10875, claim 18, in part, drawn to a method of diagnosis of an undefined pathological condition by determining the presence or absence of a mutation in a polynucleotide of SEQ ID NO X, wherein X correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 8701 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein X is 11.

If group 290 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein X is 12.

6. Groups 10876-13050, claim 19, in part, drawn to a method of diagnosis of an undefined pathological condition by determining the presence or amount of expression of a polypeptide of SEQ ID NO Y, wherein Y correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 10876 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein Y is 2186.

If group 10877 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein Y is 2187.

7. Groups 13051-15225, claim 20, in part, drawn to a method of identifying a binding partner to a polypeptide defined by SEQ ID NO Y, wherein Y correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 13051 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein Y is

2186.

If group 13052 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein Y is 2187.

8. Groups 15226-17400, claim 22, in part, drawn to a method of identifying an activity in a biological assay by identification of the protein in the supernatant wherein the cell expresses a polypeptide encoded by SEQ ID NO X, wherein X correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 15226 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein X is 11.

If group 15227 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein X is 12.

9. Groups 17401-19575, claim 24, in part, drawn to a method for preventing, treating or ameliorating an undefined medical condition by administering a polypeptide of SEQ ID NO Y, wherein Y correlates to one of those listed in Table 1, and corresponds to one of the cDNA Clone IDs, respectively. For example,

If group 17401 is elected, this correlates to Gene no 1, cDNA clone ID HOVCD34 of Table 1, wherein Y is 2186.

If group 17402 is elected, this correlates to Gene No 2, cDNA clone ID HEBGD58, wherein Y is 2187.

The inventions listed as Groups 1-17401 do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The polynucleotides and polypeptides of each invention are unrelated, each to each other. Where, for example, claim 1, items (e) through (f) do not require a polynucleotide of any degree of specificity to a sequence, it is apparent that Lindeskog et al. (1999, Virology Vol. 258 (2), 441-450) discloses a DNA encoding a polypeptide wherein said DNA renders claim 1, among the other, not novel. Thus the technical feature of a polynucleotide sequence is not special and the groups are not so linked under PCT Rule 13.1. Additionally the claimed methods produce different products and/or different results which are not coextensive and which do not share the same technical feature.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 January 2002 (03.01.2002)

PCT

(10) International Publication Number
WO 02/000677 A1

(51) International Patent Classification[7]: C07H 21/02, 21/04, C12N 1/20, 15/00, 15/09, 15/63, 15/70, 15/74

(21) International Application Number: PCT/US01/18569

(22) International Filing Date: 7 June 2001 (07.06.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/209,467 7 June 2000 (07.06.2000) US

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *with sequence listing part of description published separately in electronic form and available upon request from the International Bureau*

(48) Date of publication of this corrected version:
4 July 2002

(15) Information about Corrections:
see PCT Gazette No. 27/2002 of 4 July 2002, Section II
Previous Correction:
see PCT Gazette No. 23/2002 of 6 June 2002, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/000677 A1

(54) Title: NUCLEIC ACIDS, PROTEINS, AND ANTIBODIES

(57) Abstract: The present invention relates to novel ovarian related polynucleotides and the polypeptides encoded by these polynucleotides herein collectively known as "ovarian antigens", and the use of such ovarian antigens for detecting disorders of the ovaries and/or breast, particularly the presence of ovarian and/or breast cancer and ovarian and/or breast cancer metastases. More specifically, isolated ovarian associated nucleic acid molecules are provided encoding novel ovarian associated polypeptides. Novel ovarian polypeptides and antibodies that bind to these polypeptides are provided. Also provided are vectors, host cells, and recombinant and synthetic methods for producing human ovarian associated polynucleotides and/or polypeptides. The invention further relates to diagnostic and therapeutic methods useful for diagnosing, treating, preventing and/or prognosing disorders related to the ovaries and/or breast, including ovarian and/or breast cancer, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further relates to methods and/or compositions for inhibiting the production and function of the polypeptides of the present invention.